COMMITTEE HEARING

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	Docket No.
2006 APPLIANCE EFFICIENCY	)	
RULEMAKING 1	)	
_____	)	

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

TUESDAY, FEBRUARY 14, 2006

10:03 A.M.

Reported by:
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Contract No. 150-04-002

COMMITTEE MEMBERS

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ADVISORS and COUNSEL PRESENT

Tim Tutt

John Wilson

STAFF and CONSULTANTS PRESENT

Gary Flamm

William Pennington

Michael Martin

ALSO PRESENT

Gary Fernstrom
Pacific Gas and Electric Company

Kyle Pitsor
National Electrical Manufacturers Association

Pamela Horner
Bill O'Connell
Osram Sylvania
National Electrical Manufacturers Association

Joseph Howley
General Electric
National Electrical Manufacturers Association

Ted Pope
Energy Solutions
Pacific Gas and Electric Company

Chris Calwell
ECOS Consulting
Pacific Gas and Electric Company

Steven Nadel
American Council for an Energy Efficient Economy
(ACEEE)

ALSO PRESENT

Robert Erhardt
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Stan Walerczyk
Lighting Wizard
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Thomas Girdlestone
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Michael Minarczyk
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Fisher Nickel, Inc.

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Western Pacific

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California Spa and Pool Industry Education Council

Steve Barnes
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Leo Rainer
Davis Energy Group
Pacific Gas and Electric Company

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P R O C E E D I N G S

10:03 a.m.

PRESIDING MEMBER PFANNENSTIEL: I am Jackie Pfannenstiel, Commissioner and Presiding Commissioner on the Energy Efficiency Committee. Commissioner Rosenfeld can't be here today, but we have, to my right, John Wilson, Commissioner Rosenfeld's Advisor. And to my left, Tim Tutt, my Advisor.

This is a hearing, a Committee hearing on proposed amendments to the energy efficiency standards. And we're going to be dealing primarily with lighting issues. And from the agenda we're going to start with the lighting issues, and then there are some additional issues that we'll take up once we have gone through the lighting.

I understand that a number of people have filled out blue cards and turned them in. So, if you have not, please make sure that we get them and we will call on speakers according to the blue cards that we've received.

So with that I'm just going to turn it over to Gary to start with the staff presentation. Thank you.

MR. FLAMM: I just want to ask everybody if you haven't filled out the attendance sheet, please do so. And if you have blue cards you'd like to fill out, please do so on that.

I didn't come prepared to make a presentation, Commissioner, but I can go through the express terms if you would like.

PRESIDING MEMBER PFANNENSTIEL: I think a summary of that would be useful to kick off the hearing. Thanks, Gary.

MR. FLAMM: Sure thing.

Again, my name is Gary; I'm Technical Staff with the California Energy Commission. The first element we're going to talk about is the general service incandescent lamps. And section K-1605.3 on lamps, there are some proposed changes in table K-2.

We made -- adopted standards that took effect on January 1, 2006, which are informally being called the tier 1 standards.

For this hearing we're entertaining two more tiers, tier 2, which are column 3 of the table K-3, our various efficiency equations depending on the lumen bins that those lamps fall in. And also there's a tier 3, which is the

fourth column. And I would just like to say that the same structure occurs for the frost and clear and for the cool white lamps.

PRESIDING MEMBER PFANNENSTIEL: Thank you. The first blue card we have is Chris Calwell.

MR. CALWELL: Yeah, I had offered to go after the industry, so I'm happy to respond to whatever they present.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. FLAMM: We ask everybody, when you speak to please come up each time and speak into the microphone and state your name so that our court reporter can get the facts correct.

PRESIDING MEMBER PFANNENSTIEL: Thank you. I think we'll start with Kyle Pitsor, then, of NEMA.

MR. PITSOR: Good morning.

PRESIDING MEMBER PFANNENSTIEL: Good morning.

MR. PITSOR: My name's Kyle Pitsor, Vice President for Government Relations with NEMA, National Electrical Manufacturers Association. We're the industry association representing

lighting manufacturers in the United States.

And we have a series of presentations and comments from the industry on the general service incandescent lamp section, first point.

First we'll have Pam Horner from Osram Sylvania provide an overview; followed by Bill O'Connell from Osram Sylvania, which will review our comments and our proposal that we submitted to the Commission dated February 2nd. And then Joe Howley from GE Lighting to speak to the enhanced spectrum issue contained in our comments.

MS. HORNER: Good morning, everyone; my name is Pam Horner and I am with Osram Sylvania. We make light bulbs, and we're part of NEMA, as well.

As Kyle indicated, we're going to have some information to give you regarding general service incandescent lamps that will be presented, I would say, in two parts. I'm calling the first part the clear and frost types, plus the soft white types in the A-line versions. And there will be two subsets of that; me giving the forest view, and Bill O'Connell giving the tree or bark view.

And then the second will be the enhanced

or modified spectrum issues from Joe Howley.

So, mine is really the big picture view of these A-line lamps, both in the clear and frost types and the soft white. And my comments really fall into two general categories, and they are brief.

The first I'm calling the notion of an experiment, and I don't use that word to be disrespectful at all. It classifies what we're about to embark upon, I think, in a very positive vein, and in one that we can get our hands around.

So if we take a look at how all of us in this room have worked for the last several months, even a year or so, to agree to participate in what I'm calling an experiment, to see if it's possible for the consumers of California to save energy using these commonly used lamps, we are agreeable participants. That's the first point.

And in this experiment the subjects are real consumers. And with those real consumers they have an unknown buying behavior when it comes to purchasing what one might call oddball wattage lamps. Things that they're not used to seeing on the shelf when they purchase these lamps, unfamiliar wattages.

Third is that their buying behavior will depend on several factors. One is how well California informs them through educational programs. The second is how well we, the manufacturers do, in that same vein. Third is the cooperation of the retailers. And fourth is the motivation of individual consumers.

Now because the behaviors are unknown, what we're strongly urging is that in essence I believe Gary referred to the current situation as informally tier one, what you would look at in the next two columns of this proposal we could call, say, tier two and tier three, the two effective dates from here out.

What we're strongly urging is that a tier three or third column proposal be deferred until we can figure out what happened from tier two, because this is something that's going to depend entirely upon consumer behavior.

We also urge that that action, plus a robust education campaign, be taken because it won't take much to defeat our collective purpose here. In the letter that we submitted collectively from NEMA, we did have a table. But short of showing that table, in essence what it

says, so that all of you here can understand, we show that it will only take, if you look at the 60 watt A-line lamp, the most commonly sold A-line lamp in the United States, and the new choices would be 57, which is of course what we hope they'll go to, or a 71. It would only take 25 percent of people going up to a 71 to make the projected savings vanish. So we want to make certain we know what we're doing.

And then finally, this second bucket of comments, broadly I'm calling the experimental design. We're hypothesizing, all of us in this room, that we can save energy by trying the tier two regulations for A-line.

And we know for a fact, because of the sheer volume, that the bulk of the energy savings will come from high volume types, which is 60, 75 watt and 100 watt replacements.

Together these three types and their potential replacements represent over 90 percent of the potential savings. A really good experimental design would try to capture that. And we argue would leave off the ends.

So what we urge is that the 150 watt lamps, which are at the upper end of this

regulatory proposal, which only represent 1 percent of sales, be taken out. And that the 40 watt lamps also be taken out. These represent slightly more, but only represent 7 percent of potential savings. And they're already low wattage lamps.

So we recommend staying with what I'm calling the big three wattages. Get those under our belt, see what happens and you're already covering the bulk of the potential savings.

And then further, and my closing comment would be that we would urge the California Energy Commission to hire a third-party, independent, objective entity to design how to assess the energy outcome and to do it now rather than later, so that we see how the tier two experiment plays out.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: Excuse me, Pam. Before you leave, are you the right person to talk to about this concept of an experimental design and what that might look like? Are you the one of the industry group who's given the most thought to that, do you think?

MS. HORNER: In terms of the assessment?

PRESIDING MEMBER PFANNENSTIEL: Yeah.

MS. HORNER: Truthfully, we haven't discussed it among ourselves as to what the design would look like, but we do have -- we have someone in mind that might be a good third-party group to look at --

PRESIDING MEMBER PFANNENSTIEL: Because I'm not yet at the point of calling all this an experiment. But I do, and we've talked before about the need for some kind of what you referred to as robust education campaign. And the need to get the word out and to work with the buying public, as well as the retailers on how to make this work.

And so I guess my question to you is more in the lines were you anticipating that we just put these new bulbs out and see what happens, or that we build that, maybe we'd even call it an advertising campaign, around these new wattages, these currently unusual wattages, and get that out there.

MS. HORNER: I understand your question now. I think it has to be parallel. My last -- first of all, the word has to get out. It has to be done immediately, you're right, by all of us.

The comment about designing an assessment is that, well, frankly, I don't know that the manufacturers are the right ones to design it, because we would have a stake in the outcome, as would, perhaps anyone in this room. That's why the call for a third-party objective.

What I'm concerned about is getting into this thing after all the education campaign, and then thinking about how to measure. That's what I was concerned about. It's -- I think we have to begin both immediately. We have to design how it is we're going to measure, because how do you know. We can watch certain parameters, but we have to be certain that our efforts, this program is what's making the difference.

PRESIDING MEMBER PFANNENSTIEL: Well, taking the other half of what you would be doing concurrently then, talking about the education campaign, have you or has the industry group considered what kind of education or advertising campaign would be necessary to accompany the introduction of new, as you call it, unusual wattages.

MS. HORNER: Right. We've had some preliminary conversations already with the Flex-

Your-Power group. And if others from NEMA who are more familiar with this could comment when they do come to the podium, but we have had some comment or discussions on this. And we've talked about the need for programming through retailers. We have to bring retailers in. This is a big part of it, because point of purchase is where people make these kinds of decisions.

And also the media, trying to get the media word out, the website information. So there have been four or five different aspects of communication that we've already talked about.

PRESIDING MEMBER PFANNENSTIEL: The question that I would put specifically to you and your company, and I'll probably, if I remember, ask it of the other representatives of the other companies, is whether there's an intention, at this point, of putting advertising dollars, putting some part of your advertising budget into promoting these new wattages.

MS. HORNER: The answer is yes.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Should we continue with the NEMA presentation?

MR. O'CONNELL: Good morning; my name is

Bill O'Connell. I work with Osram Sylvania. I just want to go through kind of in detail the curves that we have recommended and some of the differences.

Can everyone see that okay? What I have here first, the top table is the table as provided in the 45-day language by CEC. The table on the bottom is the table that NEMA is proposing to replace that. This is for clear and frosted lamps.

The three sets of braces here, hopefully you'll be able to see the mouse move around on the screen, this brace, this brace and this brace all represent areas that were combined into one lumen range in the NEMA proposal. And that is because the NEMA proposal is basically driven by simplicity and consistency. We want this to be as clear and simple a table as possible. We want this to be as consistent as it can be in terms of how it reacts to the previous regulations.

So, because of what Pam mentioned of removing the 40 watt regulation at this time, we come down to this area which basically follows the 2006 regulations up to the 57 watt area, which is what we wish to move 60 lamps to.

We also are suggesting that there should never be more than one equation between any two lumen ranges in order to keep this as simple as possible, so that you combine the two steps which were proposed in getting from 71 watts to 95 watts into one.

Again, at the bottom, because we are proposing that we do not regulate the 150 watt lamps at this time, it goes from three parts to one.

Okay.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. O'CONNELL: This graph actually shows the 2006 regulation as it was adopted. The 2008 proposal is in purple. It also shows two NEMA proposals, one from November of 2005 and one from January 2006.

All of the little points on that are the data that Chris Calwell has been using for lamp performance, which he provided to NEMA and I included here.

As you can see, we are very very very close. And this is really just about simplifying it to make it as practical as possible.

On the big graph you can't see much, but I did zoom in at one point on the step from 57 watts, which is the line here at the bottom, 71 at the top. And as you can see, one of the things about being consistent is that each plateau in the NEMA proposal always returns to the 2006 line, just for consistency. Always doing the same thing.

The second table will look very very similar. This is the soft white lamps instead of the clear lamps. While a couple of the numbers change, the ideas remain the same in terms of three lines coming into one, or two lines coming into one in order to maintain the simplicity and consistency.

Very similar graph. There is one thing I wish to point out just because I'm unsure of it, and I'm hoping that Mr. Calwell can help me understand when he speaks, in the realm of transitioning from a 57 watt lumen bucket, as we have called it at some point, to a 71 lumen bucket there's kind of a little dog-leg there. I don't know how else to describe it.

I checked my math five times because I didn't think that was what was intended. So, I'm

just curious as to whether or not that was the intent essentially.

Zooming in on that you can see the NEMA proposal, which is in blue, is simply a straight line connecting to the two points.

And in all these cases where we have an equation these straight lines are literally calculated as take the point at the beginning and end of each of the lumen buckets and calculate the straight line between them. Again, for simplicity.

So, what we have done, we have proposed new equations between 57 and 71 watts; and these, again, are derived by finding the equation of the line between the two points. There is no further regulation of 40 watt and 150 watt lamps at this time because they represent less than 10 percent in total of potential energy savings.

We recommend keeping the table as simple and clear as possible by having only one equation to step between these ranges. And, of course, again we are proposing not to regulate anything in 2009 at this point because we will not yet be clear as to the effects of the 2009 regulations.

PRESIDING MEMBER PFANNENSTIEL: Thanks.

Further, NEMA?

MR. HOWLEY: Good morning. I'm Joe Howley from GE, also representing the NEMA lamp section. And I'm going to provide some further comments on the proposed regulation for the enhanced spectrum and/or modified spectrum lamps.

We would view the current proposal for this particular product line to be the most extreme of any of the proposals in that currently there are no products available on the market today that would even meet the proposed regulation. So this is probably the first time where we've seen really, in any state, a regulation that would eliminate an entire product line with no potential products to replace it, no existing products on the marketplace to replace it.

We had some discussion about what the justification for such an extreme ban would be. And it seemed like the biggest justification centered around the fact that well, just possibly, this product line may get bigger than it is today, and possibly may represent more energy savings if it did grow.

The discussion also centered around the

fact that perhaps to keep this from happening, or to keep people from abusing this exemption category that we should tighten up the definition. And, indeed, we did propose a much tighter, more technically robust definition that would prevent companies from using this particular exemption area to sort of game the regulations, and provide products in this area that perhaps weren't really indicative of what industry views as the enhanced spectrum category.

And we appreciate that the proposal actually shows this more robust technical definition as we proposed it.

But this product line, again, right now as it stands today, is a niche product line, probably represents less than 5 percent of this market, even though it's been marketed for over 20 years. And the reason that it's relatively small is because these products are much higher priced than standard lamps, and they have an unusual color. So it is not the color that people generally expect to come out of an incandescent lamp. So it's used for specialty purposes as a niche product.

The other issue with this particular

product line is there's no assurance of savings. It suffers from the same experimental issues as the standard lamps. But we have a hard enough project on our hands here to market these reduced wattage soft white and clear lamps, bringing the enhanced spectrum type products into this same type of experiment does not seem to be appropriate, until we know exactly how the consumers might respond.

Consumer behavior of a niche product is likely to be even more unpredictable in terms of what wattages they may go to in this particular area.

The other aspect from the manufacturer point of view is it's an extremely expensive exercise to redesign a single lamp type, and to build manufacturing equipment for it, and to produce it. While we are offering the 60, 75 and 100s as products we'd be willing to redesign simply because the potential for energy savings is there, and potentially will get over 90 percent of our energy savings by focusing on a couple key types, this particular proposal does not have those same traits.

The proposal would require us to

redesign an entire product line, not just a single wattage or two. And over the entire product line there are different designs, they're produced in different production plants and different production lines. So the same expenses and costs would be incurred across this entire product line with very little potential for savings. And with that, significant costs. We'd have to spread it over much fewer sales, much fewer sales on a niche product line into one state.

This is why this is so problematic for industry, the cost/benefit for industry is extremely bad. The potential savings for energy for the state are extremely low.

The last comment I'd like to make on this is even the curve that's proposed appears to suffer some of the same technical issues as some of the earlier curves on soft white and clear. We have not tried to fix these technical flaws, but the current proposal is not technically robust in terms of how it should be applied to this technology, even if you were to theorize going in the direction as proposed.

That completes my comments.

PRESIDING MEMBER PFANNENSTIEL: Joe, my

first question to you really is not about the enhanced spectrum, but going back to what we talked to Osram Sylvania about, the question of the willingness of consumers to purchase these, unusual to them, wattages. And I just want to know whether GE intends or would intend to mount some advertising campaign to work with customers and retailers if those kinds of unusual wattages then went into the marketplace.

MR. HOWLEY: Yes. We were having discussions on this when we were talking about doing this on a voluntary basis. Our consumer marketing teams are fully engaged. We started to have some preliminary discussions with our retailers at that point.

But certainly the plan would be, if we were to come out with unusual wattages, that we would have to wrap a marketing campaign around it with the retailers. And they were talking about a whole new, like a re-launch of a brand new product line in this area; hopefully getting some support from Flex-Your-Power and the state to try to promote this and educate consumers in the state.

PRESIDING MEMBER PFANNENSTIEL: And then on to a question on the enhanced spectrum. You

used a less than 5 percent of the market figure. Based on the number of light bulb sales, the amount of energy used, what does the 5 percent represent?

MR. HOWLEY: Unit sales in this area that represents these common type of, you know, A-line incandescent lamps.

PRESIDING MEMBER PFANNENSTIEL: Thanks.

MR. WILSON: Joe, is there some publicly available source of data for the percentage of sales for enhanced spectrum so that we could track that over time?

MR. HOWLEY: No, there is not at this time. This is proprietary data. NEMA does not publish data in this particular area. But we, going forward, that's something that we may be able to have discussions on in terms of tracking this growth, if it does occur in this area. But right now there is not publicly available data.

There are some retail -- there are organizations that track retail sales at point of retail. I know that Chris has mentioned some of them they've used already. And perhaps this category could be added to their surveys. They do retail surveys. I can be done, I guess, is what

I'm saying, but it's not done at the present.

MR. WILSON: Okay, we can talk to you, Chris, about surveys. But you mentioned the possibility of exploring whether NEMA could collect that data for the special circumstance so that we could have some idea of what's happening in the market.

MR. HOWLEY: It's possible; there could be some disclosure issues with this particular area. Whenever you get into an area that's what we view as a niche product, and it's not a widely manufactured product and doesn't have a large amount of sales, there are certain disclosure rules that NEMA has to maintain. And there are potential issues with disclosing some of the niche product lines.

I don't know if they would occur in this case, but they may. That's all I'm saying. I can't guarantee you that we'd be able to disclose data on such a small product line. We always run into issues when we try to measure a very small product sales area.

PRESIDING MEMBER PFANNENSTIEL: Tim.

MR. TUTT: Yes. Joe, looking at the tier three category that was proposed, as you

suggested that's perhaps less than 10 percent of the total overall savings from incandescent bulbs in the standards, proposed standards.

MR. HOWLEY: Yeah.

MR. TUTT: But parsing that out a little bit, the 40 watt light bulbs are about 80 percent of those savings.

So, give us a feeling as to how the state could try to get that portion of the savings if we were to make changes from the proposal, if you could.

MR. HOWLEY: Well, obviously you're referring to the 40 watt being sort of the last big chunk of the more easily attainable savings. Obviously that's one more skew. It's still a lot easier to design one more skew than a whole product line, such as what we were just talking about, enhanced spectrum.

The only comments I'd make there, it's an area we could talk about more. It is, we recognize that as being the last potential chunk of energy savings. We would suggest, though, that the percentage should remain consistent, as Bill was mentioning; in that it should be a 5 percent reduction on that product line. Right now it's

proposed to 35 watt, which is more than 10 percent.

The problem when you get into reductions of something like, you know, 12 percent, you get into a situation where you have a real hard time maintaining lumen output that's the same. It'll be perceptibly less bright than a 40 watt. Going to 35 probably oversteps, but if you stay within the 5 percent range, we'd have to have those discussions about doing that properly.

But we do recognize that the 40 watt is the last area with any meaningful wattage savings.

We still would like to try to experiment with -- well, what we call experiment, but try this with the three types. Perhaps if the tier three was eliminated entirely, there may be room there to talk about the 40 watt.

MR. TUTT: Okay. One follow-up question. So with a larger percentage drop, and I've got lower level of wattages, you'd have trouble maintaining the same amount of lumens or significant enough lumens to avoid a perceptible difference?

MR. HOWLEY: Right.

MR. TUTT: Depending on the options that

you choose to create the new set of bulbs, you wouldn't necessarily have lower lumens at all, is that correct?

MR. HOWLEY: We may not have. I mean these bulbs have not been designed yet. Quite frankly, this is going to be a 2008 regulation. Our design teams have yet to conceive what they might do with them.

We know what the maximum wattage would be, such as setting at the 57 and so forth. But, they may choose to get more energy savings.

But certainly in all cases we'd want to keep the perceptible brightness the same as the standard lamp or else it will not -- we don't believe it'll be successful.

Putting this at 35 on a 40, though, it would be very difficult to keep the perceptible brightness the same as the 40 watt. It'll be noticeably dimmer going through that extreme drop in percentage wattage.

MR. TUTT: Okay.

MR. HOWLEY: Any other questions? Thank you.

PRESIDING MEMBER PFANNENSTIEL: Chris, did you want to respond now, or, Ted, were you

going to do that?

MR. POPE: If I could I was going to make a quick comment or two and then Chris was going to go.

PRESIDING MEMBER PFANNENSTIEL: Fine. Please identify yourself for the record, Ted.

MR. POPE: Ted Pope with Energy Solutions, here on behalf of PG&E. Just a couple quick comments.

I recently got a copy of the data from NEMA dated December 14th where it shows the percentage of sales for the different size lamps. And our team takes issue with the estimate of 7 percent savings only coming from the 40 watt lamps.

Our market share data is a little different than NEMA's. It's broken into a bin, it's 35 to 45 watts, which, you know, surrounds the 40 watt lamp. And depending on what year you look at it, it's 17 or 15 percent of sales. So it's not that different than NEMA's.

But our understanding of the -- and we've talked about this in past workshops, the physics of how -- the one example we provided, which was using more krypton in the bulb to get to

the standards levels, you get a bigger proportional savings at the lower wattage.

So down near 40 watts, rather than the 5 percent savings their estimates show, we'd be looking -- we'd be expecting something more like 8 to 10 percent savings.

So I don't have an exact number but it seems like they're low-balling the savings value of that lower wattage category significantly, as we understand the physics of it.

And that's it, thanks.

PRESIDING MEMBER PFANNENSTIEL: Chris.

MR. CALWELL: Good morning, I'm Chris Calwell from Ecos Consulting and I'm representing PG&E. I'm going to pass a couple materials up to the Commissioners first, if I can.

These graphs become harder and harder to see the more datapoints we put on them. So, I've furnished two copies of the presentation to Commission and staff, especially for the key graphs. And then a couple samples of modified spectrum lamps and the receipt for their purchase so you can see what the retail prices are.

What I would like to outline first is just the three key areas I'll try to address this

morning. The first is to indicate that PG&E would like to suggest slight modification to the 45-day language, primarily intended to preserve savings in the soft white and frosted, clear product categories.

But to also preserve a consistency in the tier two approach, which I think will make more sense when I show the graphs.

And then perhaps most importantly, it's just to help discourage sale of dimmer lamps. We have had a lot of discussion in this room over the last, gosh, two years, I think. And in the last six months or so it became clear that industry definitely believed some of the products would comply by providing fewer lumens than they do today.

And I think there are reasons not to go that route, or to try to strongly discourage it, and so I'll address that a little bit, as well. I'll speak to the 40 to 57 and 101 to 150 watt lamp categories, and the importance of retaining them. And then lastly address the modified spectrum issue.

This is a slide that I've shown here before but I just want to review for clarity.

When we looked at savings per lamp the math can get very complicated, but it also is very simple if you remember that dividing by 1000 hour lifetime is the same as the 1000 that you have to multiply by to convert watt hours to kilowatt hours. So those two cancel each other.

And it's really -- if you want to know what are you saving by passing a standard for incandescent lamps, roughly speaking it's how many watts do you save times how much does the electricity cost. You multiply those together and that's the lifetime savings.

So, 5 watts saved, our long-time assumption we've used for electricity is 11.5 a kilowatt hour, and so that's worth about 57.5 cents for a 60 watt lamp. And on and on for the other categories you see here.

Today I took a look at the current electricity rates that are being charged residential customers in California. This is PG&E's current rate table. And I think, as the Commission is familiar, the rate table is divided into a tier one, which is their baseline rate. And you have to pay at least that for the first chunk of electricity that you buy. And then as

you exceed baseline you pay escalating rates.

So you notice on this slide here that the baseline rate is 11.4 cents, virtually identical to our original assumption. But the tier two, three, four and five rates range from roughly 13 cents a kilowatt hour up to an astonishing 33 cents a kilowatt hour if you use a substantial amount of electricity.

PG&E, on its website, averaged these reflecting the amount of electricity that customers typically buy, and concluded that the average rate paid residentially is 15.4 cents.

So what does that mean? The 5 watts saved are, in fact, worth about 77 cents to a PG&E customer today; and 4 watts would be worth about 62 cents. If you compare that to the previous slide, it's an additional value of energy savings of 30 percent.

Why do I call this to your attention? Primarily because if the justification for the standards is to pursue what's economically justified and cost effective, we shouldn't be considering ways to curtail the scope of the standards, we should be considering ways to expand them. More is now economically justified than it

was when the original analysis was done.

This is also a slide I've shown you before, but I wanted to highlight a different aspect of it. We spent a good long time in 2004 and 2005 debating what the cost effectiveness of krypton would be. And so our team disclosed all of its assumptions about the volume of krypton in a lamp, the global market price for krypton. And as well as some markup assumptions that we made for manufacturer, retailer markup.

So I wanted to call your attention here to the middle slide. And I do want to ask, is there a laser pointer available, do you know, Gary?

MR. FERNSTROM: I think I have one, Chris, just a moment.

MR. CALWELL: Okay. Well, looking at the middle assumption here, and the height of the basecase mid-bar, the third one that you see there, reflects a typical price we see in the market today of about 25 cents for an incandescent bulb.

And it's made up in this example roughly in thirds. What we believe it costs the manufacturer to make the bulb; what they earn on

it if they pass on 100 percent markup to their retailer; and then what the retailer earns on that if they pass along a 50 percent markup to their final purchaser. So there's our estimate of how the 25 cents is comprised.

So then that red bar that you see there reflects the addition of krypton to the mix. And we fully acknowledge that that adds a few cents additional to the manufacturer's cost. And then we proposed that they continue to mark that up by 100 percent, now earning more profit per bulb than they did before. And that the retailer continue to mark that up by 50 percent, also earning more profit per bulb than they did before. With the final incremental cost to the consumer of about 14 cents.

So let me link, if I can, that 14 cents number back to the numbers I just showed you. Current rates make us believe that the value of the energy savings is in the range of 62 to 77 cents. If you're saving 4 or 5 watts per bulb, even if you're saving 3 watts per bulb, the savings still dwarf the incremental cost.

This is not manufacture incremental costs; this is not wholesale incremental cost;

this is estimated retail incremental cost with additional profit margins.

Even the high case scenario we plotted over here on the right where we assumed that krypton cost more than we thought, and the other cost to the manufacturer were more, the savings are still very justified by the resulting -- I'm sorry, the extra costs are justified by the resulting savings.

So, I wanted to leave you with this summary. What is 1 watt worth to California in an incandescent lamp efficiency standard. As we know, there's about 70 million qualifying lamps sold per year in the state. One watt is, roughly speaking, a 70 megawatt power plant.

And it's delivering savings, whenever the power's being demanded, to illuminate homes. It does not have power conversion losses or line losses in it. They occur at the site where consumption is occurring.

And if the savings are technically achievable and economically justified, we believe they should be included in the standards whether they come from products that represent 30 percent of the available savings, 10 percent, 2 percent, 1

percent. The savings are economically justified and technically achievable.

So, let's take a look at the charts. And some of this will look familiar from the previous presentations, but we had the same instincts that NEMA did, which were to zoom in on the graph so you could see a little more what was going on.

And now for the Commissioner and staff, we're moving to the part of the presentation that you have copies of in front of you.

This is the proposed soft white standard, and let's just review what the three lines are. The black line represents the adopted tier one; the blue line represents the 45-day language that's in the Commission Staff report; and then the green line is PG&E's proposal.

We also focused on this area where there was an inconsistency in the standard, and we are proposing a less stringent standard here in the range between 60 and 35 watts than is in the Commission's 45-day language.

The difference is, and I think you can see this here, and I'll show it to you on the enlarged versions, note that this standard very

simply parallels exactly the tier one line, but is moved downward by a few watts. It's not sitting on the tier one line.

If I were sitting on the tier one line, then in all of those areas you're getting no more savings than you already have on the books. And, yes, it's true, the majority of bulbs land underneath the plateaus. But not all of them. There's clearly a bunch of bulbs sold in the other wattage ranges as well. So, being below the tier one line by a few watts gets you savings there, too.

Let's zoom in and look at, here's the first part of that chart's range that you just saw, but only from zero to 1500 lumens now. And it makes the differences in the levels a little more obvious.

You can see here the Commission's levels become sharp points. And what we tried to do in our proposal was make all the diagonal areas of the standard exactly parallel to tier one. And then the plateaus to be of a more consistent width rather than a widely varying width.

Here's the range from 1500 to 3000 lumens; again showing the same issue.

And so why is this cap right here of a couple of watts important? And it's primarily important -- this, I think, is a review of what we talked about before, but remember if lumens are plotted on horizontal axis and watts on the vertical axis, then manufacturers have a number of ways for a product to become compliant.

And let me pick an example here. Let's do, let's say this one here. So you can see, as an example, there are some lamps in this range right now, these are 60 watt bulbs being marketed at around 800 lumens or so. If they become more efficient at constant brightness the dots would move vertically downward.

That's, in our mind, the intent of the standard, to hold light output constant and reduce wattage. If you simply make a dimmer bulb, the lamps tend to move diagonally backwards like this, at roughly the same slope as the tier one line.

And so we're trying to avoid situations where they can move backward and slide into spots like there or there, or in there, that would allow them to qualify for the standard technically, but actually provide the consumer less services than they did originally.

Let's take a look now at the same soft white standard, but instead of comparing to the Commission's 45-day language, we'll compare to the NEMA proposal.

So, again, the green line is PG&E's proposal, and the red line is NEMA's proposal. Here's the range from zero to 1500 lumens. And I want to call your attention to the number of existing lamp models in between the green and red lines, all of which would continue to be sold as-is if the NEMA proposal were adopted; and would need to have their efficiency approved if the PG&E proposal were adopted.

So that's the lower end of the lumen range for soft white, and there the upper end of the range.

Let's take a look now at the frost and clear. There are a larger number of models offered here, but as you all know, there's a smaller number of total unit sales. And so, again, zoom in.

What we've tried to do is establish a slope which is consistent with tier one, but a few watts below it. And follow that slope anyplace that there's not a plateau. And where there's a

plateau to have one of roughly similar width.

So I won't go through the specifics again, but you can see many examples where lamps could slide inside the current Commission's proposal by becoming dimmer instead of needing to become more efficient at constant light output.

Here's the higher end of the lumen range. And then here again are the comparisons to the NEMA proposal. I think it's a very similar story to what you saw on the soft white that I just illustrated.

Here, again, there's more models, so you take a look, all the models here between 250 and 750 lumens are products that NEMA proposes to be allowed to continue to sell because they already comply with tier one. But no additional improvements will be needed. Versus getting them below the green line with a few watts deduction.

What's a watt worth? 70 megawatts.

The last thing I want to talk about, the modified or enhanced spectrum question that was addressed before.

What we have done here is to highlight two things. So, first let me point your attention to the white dots. These are the modified

spectrum lamps for which we could find lumen information.

One of the products that we see in the marketplace, and you can find these in natural food stores and whole foods and so forth, are modified spectrum products that are made by other manufacturers than the big three, and they don't disclose their light output. So there are more modified spectrum bulbs out there, but we don't know what their efficiency is because they don't tell us on the packaging and they haven't been independently tested.

So, here, if you want to hand that up to the Commissioner, great.

So, of the products that do disclose their light output and power use, the white dots reflect the values that we see in the marketplace. And I want to call your attention again to this dot between 750 and 1000 lumens. It's a Westinghouse halogen product marketed in this space as a modified spectrum lamp and meets the standard by a substantial margin.

Other products of similar technology would meet it if they were offered in the other wattages. This just happened to be the first one

we spotted in a retail store.

The more important part of this chart are the orange dots. The research that we have relied on from the start on this project is the industry studies that were done and published in the Illuminating Engineering Society journals. And they report percentage improvements in efficacy for various wattage ranges, like going from an argon fill to krypton fill. And so the orange dots, in every case, represent our estimated power consumption of these modified spectrum lamps if fitted with krypton instead of argon.

And so the standard level proposed is designed to allow those products to qualify in each of the wattage ranges.

Let me then summarize the differences between the various approaches as follows: We'd like to maintain the gap of a few watts between tier one and tier two. Why? To keep advancing technology and to secure additional cost effective savings beyond what the Commission's already adopted.

Electric rates are going up; the need for power is going up. I don't think the urgency

of gaining more savings in incandescent lamps has dropped. If anything, I think it's pressing us ever harder.

We'd like to maintain parallel slope lines at parts of the curve other than the plateaus so that there's a consistent technical challenge being put to the manufacturers as they advance from tier one to tier two.

And to retain lamps in the high wattage and the low wattage categories that we spoke to before. As Ted mentioned, there's some disagreement over how much of the lamps are sold in each of the categories. But the data are clear that higher percentage savings are achievable from krypton at lower wattages.

Lastly, I'd like to touch on this modified spectrum bulbs issue. They have been asserted for many months now by the industry to be niche products. So imagine my surprise when I opened my Sunday newspaper last month to discover that they're now being offered in ten-packs at Home Depot. This was on the front of their national Sunday circular.

And you can buy a ten-pack of these which is called the pantry pack for 49 cents

apiece. Now, what does that mean? A few years ago a general service incandescent bulb sold in four-packs for 50 cents apiece. And now through improvements in the productivity of manufacturing them and lower costs and so forth, it's now possible to buy them for 25, or even 19 cents.

But modified spectrum bulbs are now selling today for what general service, plain vanilla bulbs sold for a number of years ago. The lamp samples that we've left up there with the Commission and staff to look at, also include a comparable product from Philips. That product was selling at retail for the same 50 cent price per bulb even in a four-pack.

And we just don't see them being niche products that are marketed for specialized applications.

Let me call your attention to the most popular of the models. This is the General Electric Reveal 60 watt lamp. And you have a sample of it in front of you there.

The product marketing messages on the lamps are clearly stating their intent to replace every lamp in the house. And there's four particular ways you see that on the product.

It's labeled as general purpose right at the top. And then the other messages that appear on the box include a ranking of the quality of light scale that you can see on the side of the box. And it states that the quality of the light is higher than the conventional soft white bulbs.

The package also says this product will, quote, "transform every room in your home from ordinary to extraordinary with Reveal bulbs." Doesn't just say kitchens and bathrooms; it doesn't just say living rooms and bedrooms. It's intended for every room.

And then lastly, it says to try Reveal bulbs wherever you want clean beautiful light. So, I think that the sales are still low, but the marketing intent is very much to expand those sales.

What about the niche product assertion? Yes, they have less than 10 percent market share today, but they're heavily advertised, they're highly profitable to sell, and their sales are rising. We're pretty sure they'll be a larger share of future sales.

And honestly, I don't think niche product means that it's, quote, "intended for

limited application." I think it means we have a very substantial marketing campaign. We haven't persuaded everyone to buy this yet, but we're working on it. And we hope to sell more of them in the future.

Lastly, I want to leave this audience with just a lesson from the last time this effort, last time a manufacturer effort to sell less bright light bulbs was in the public eye.

In 1992 there were a set of news stories that highlighted the outcome of litigation over a product called Energy Choice. I apologize, I don't have the incandescent version of it, but this is a sample packaging for a fluorescent version that was sold at the same time.

And these were introduced in '91. They were offering customers a lower wattage product, but the product was simply dimmer. It was not more efficient. And the products cost more.

So The New York Times coverage of this outcome said, quote, "GE pitched its 90 watt energy choice bulb as a replacement for a conventional 100. 'There wasn't anything special about the light bulb,' said the Texas Assistant Attorney General, 'it wasn't producing the same

amount of lumens as a 100 watt bulb.'"

So The New York Times covered the litigation. The Santa Rosa Press Democrat covered the litigation and featured this woman who had paid $4.79 for a pack of four of these bulbs compared to $3.49 for a general service standard incandescent four-pack. And her quote was, "My first thought was how can they get away with this? They're charging me more and actually giving the consumer less."

And so the result of her litigation was a $3.25 million settlement to end the case with both individual class action lawsuits, as well as a set of states and the Federal Trade Commission.

And this told manufacturers very strongly that they needed to watch the claim of equivalence and only say this bulb replaces this other bulb if it provides an identical amount of light.

Here's the Home Energy Magazine story covering the same outcome. And the three things that changed after this litigation and announcement was first, GE modified the packaging to remove claims of equivalence from dimmer bulbs. And so now what appears on products like The Miser

is nearly the same amount of light. I can forward along a sample of that if they want to see what it looks like.

My hope is that as this standard unfolds we don't have nearly the same amount of light. That products that meet the new standard and that benefit from marketing by Flex-Your-Power and that benefit from incentives from utilities absolutely provide identical light or more, but save power.

The settlement between GE, the Federal Trade Commission and the 32 states ended up costing GE $165,000 in legal costs, and they settled the four class action lawsuits I mentioned for a multi-million-dollar settlement. As well as covering legal costs and then giving rebates and coupons to consumers to offset the extra money they were charged.

I believe we have the opportunity here to do something very simple. Hold light output constant; reduce power use; save energy; and shift consumer preference.

I want to conclude by saying that I hope the energy efficiency standards can deliver comparable light output, lifetime and product performance for less power use. I hope that the

standards do not encourage the sale of dimmer lamps. And believe if you structure them as PG&E has proposed, that'll be strongly discouraged.

Californians do expect to get an equivalent or superior product if they pay more for it.

And lastly, I think there's a potential for consumer and press backlash unless the krypton, halogen and other efficiency technologies that we've talked about are used to deliver comparable service for lower power use.

With that I'll conclude and be happy to respond to any questions.

PRESIDING MEMBER PFANNENSTIEL: Thanks, Chris. Actually, what I was going to do was ask Joe Howley on specifically one of the points you made, maybe Joe can respond. But it really has to do with the question of whether the enhanced spectrum bulbs are as available in the market as Chris is finding them to be.

I understood from your comments a few minutes ago that there really aren't many in the market and that they really are, and have been, and will remain a niche products. I think that becomes a really big issue for us.

MR. HOWLEY: Yes, I mean they are a small volume sales product. Are they available in the market? Yes. Do we try to promote them? Yes. Do we market them to try to increase sales? I think that's the definition of any product ever developed for the United States for sale, is they are marketed and the product managers try to increase the sales.

So, yes, they are available. But they are more expensive and they do have an odd color to them, which is why they sell at a much much lower rate than the standard product line.

It's currently, you know, a small percentage of the market by anybody's definition. It is a custom made product. It's difficult to change. There's very little energy savings potential here, which is, I think, the main point at the present time.

Chris' proposal is a very complex proposal. And what we've been saying from industry is we've got to keep this simple. We have to keep this regulation simple as we're proposing, that delivers fairly simple and easily understandable products.

And then we have to get the consumer to

buy into it. Because, as Chris mentioned, if we don't get them to buy into it, or if they buy products that aren't the same wattages, if they're different or if they up-wattage, if that combination even, just the average increase is just 1 watt, as we've just learned, just the 1 watt increase in the use of power for incandescent lamps by this experiment means we have to build another 70 megawatt power plant.

So that's what we're dealing with here. We're dealing with something that we have to be very careful, we have to keep this very simple. And that is what NEMA is suggesting, simplicity.

The niche products, until we know more about how consumers are going to behave in this overall product line for soft white and clear, it is not time to discuss these kinds of products.

If, in the future, they grow, and if we figure out what works with the consumer, in terms of the messaging, and if we get them educated to those wattages that would be the time to talk about those types of products.

PRESIDING MEMBER PFANNENSTIEL: Are there products in the market now, bulbs in the market now, the enhanced spectrum bulbs, that meet

the proposed standards?

MR. HOWLEY: No. The only product -- no, but I'm saying the standard product line that we're talking about, we're talking about standard technology, 60, 75s and 100s.

The product that was pointed out was a halogen-based product. It's a much more expensive product. It's also viewed not as a standard incandescent A-line bulb. There are no standard incandescent A-line bulbs that meet the proposed standard. That product is not viewed as a standard product.

MR. CALWELL: So I think the only response I'd offer there is just that graphs that we've been looking at are not intended to include only the familiar A-19 general service incandescents. There are all sorts of general service halogen products that appear on here, too.

As the Commission knows, the definition was written very carefully to include the shapes and sizes and technologies that all serve the general service purpose. And they are not all pear-shaped general service incandescents.

The Philips halogen is and the General Electric Edisons and so forth are included. So

it's equally appropriate to include them in the modified spectrum.

The final thought I suppose I should add there is this Reveal 60 watt product that you have a sample of in front of you is one that sells in a Home Depot just a little ways down the aisle from the 60 watt soft white product that the person might have come to buy.

So I wanted to ask that the Commission consider the following: If it regulates the conventional incandescent bulbs, but doesn't regulate the modified spectrum, what happens when the consumer comes to the store and says I want to replace my 60 watt bulb, it just burned out.

They're presented with an array of 57 or 54 or 55 watt general service incandescents, and then just a little ways down is a 60 watt modified spectrum. And they say, well, I need to get a 60, I guess I better go pick up this one.

Seems to me that if they're intended for the same general service application the standard should apply to all of them because the physics of making the bulb consume less power are the same.

MR. HOWLEY: However, it will be at much higher cost, and that would be the goal, is to get

them -- one of the ways we'll be successful at this is by offering lamps that are competitively priced at these lower wattages, along with the marketing campaign.

The overall goal here is to save energy, and I believe we're spending a lot of time on an area that doesn't offer a lot of energy savings potential. Where we should get back to what we're really trying to do here, which was focus on the main product types; educate the consumer in a brand new way; and have a good chance of success of getting them to use the 60, 75 and 100s at slightly lower wattage and thereby saving the potential -- a significant amount of energy in this state.

This conversation, in my mind, is going into areas that -- we're spending a lot of time on them, but simply don't have the opportunity to save a lot of energy. But they're taking a lot of the Commission's time.

MR. FERNSTROM: Commissioner, may I add a comment on behalf of PG&E?

PRESIDING MEMBER PFANNENSTIEL: Yes.

MR. FERNSTROM: I'm Gary Fernstrom, Senior Project Manager for our appliance standards

project.

I'd like to address this issue of conservation energy savings and energy efficiency. We do our advocacy here based on public purpose funds that we collect from our customers that are authorized by the California Public Utilities Commission.

The CPUC has a very specific definition of energy efficiency. It is not conservation. It is bringing consumers the same utility for less power use.

So it troubles me when I hear us spend a lot of time discussing what the outcome is going to be. Whether it's going to be more light for proportionately less power; or the same light for less power; or less light for less power.

It's real clear to me what energy efficiency is, and what we're after. We have repetitively shown that these improvements in energy efficiency are cost effective. And we would encourage you to adopt our recommendation.

I also have a couple of historical perspectives. I'd like to point out that the PG&E team met with NEMA over two and a half years ago in southern California to talk about this

proposal.

We proposed a simplistic approach which NEMA encouraged us to do. In the interim we've gotten a more complicated approach in order to accommodate industry's concern about the potential sale of lower wattage, lower lumen bulbs.

And now industry is again claiming that they want to move toward simplicity. So, it makes it very difficult for me to understand what industry's goal is here. Whether it's simplicity or trying to get the maximum number of currently available bulbs to qualify under the new standard.

And I'd like to also make reference to the historical case of the BR and ER lamp, where these lamps were a small portion of the market. And they'll be discussed later on your agenda. But they're pervasive in the marketplace now.

So I think it's absolutely essential, as Chris suggested, that we address enhanced spectrum A-lamps.

PRESIDING MEMBER PFANNENSTIEL: Are there other comments? Yes, Ted.

MR. POPE: Ted Pope, Energy Solutions on behalf of PG&E. I'd just like to point out, Joe, my understanding was just a couple or three years

ago these modified spectrum lamps were something on the order of $2 apiece. That number may not be exactly right; my sense was they were quite expensive. It was an upper end product. And presumably between low awareness and the high cost, that would explain low sales.

But now that we're seeing the 50 cent price range, I find it surprising that you would not anticipate substantial sales given that this position as a high end product and the price is now becoming far more competitive with standard A-lamps.

MR. HOWLEY: Well, I congratulate you for searching the market high and low, I'm sure, to find the absolute highest volume, lowest priced product you could find. That certainly doesn't represent the average. It is obviously a ploy to try to get you to believe that they're much lower priced than they are.

The standard two-pack and four-pack is much more common. The pricing level is typically much higher than 50 cents a bulb. That's probably the only place you'd find it. And you'd have to buy in bulk at ten lamps to get that kind of price point. Typically it is a much higher priced

product. Find it in a drug store in a one-pack and see what you're going to pay for it.

MR. FERNSTROM: I bought the product in a four-pack. Commissioners and staff, you have it. I bought it at the Home Depot.

MR. CALWELL: The receipt is in front of you. Four Phillips bulbs were $2 and the four General Electric bulbs were 67 cents each.

PRESIDING MEMBER PFANNENSTIEL: We have them. Are there questions then for Chris? Anything else, any other comments on the general service incandescent lamps?

If not, we'll move on to the incandescent reflectors. And, who from NEMA -- Pam, were you going to speak to this?

MR. FLAMM: Commissioner, can I make -- this is Gary Flamm, could I make a statement first, please?

PRESIDING MEMBER PFANNENSTIEL: Yes.

MR. FLAMM: NEMA and ACEEE have proposed a joint standard that they agreed to, a consensus standard. And staff agrees with that. It is our intent to adopt that consensus standard.

There is some question on whether the language we put in the 45-day language is

consistent with that agreement.

So I just wanted to state that it is our intention to adopt the reflector lamp standard that was agreed upon.

PRESIDING MEMBER PFANNENSTIEL: Well, do we need NEMA or ACEEE to come and comment on that here? Or is it -- do we now understand what the language should be? Steve or --

MR. FLAMM: Or Pam.

PRESIDING MEMBER PFANNENSTIEL: -- Pam.

MS. HORNER: We're speaking with one voice. This is Pam Horner with Osram Sylvania, a member of NEMA.

Very briefly, Gary, you're right. ACEEE and NEMA have come to an agreement which actually the California Energy Commission asked us to do in October. And we did. We went back to the drawing board and created something that -- we have piles and piles of spreadsheets showing projected savings.

And we have agreed to work together using this proposal to establish, in effect, a national standard going state by state.

I can tell you that Massachusetts just passed it; Vermont and Rhode Island are proposing

the same. So we're on our way.

Essentially the only glitch was where the 45 watt R20 belonged. It somehow got put up into a "thou shalt meet the table" efficacy standards rather than being exempt. The 50s, the 75s, all those still have to meet the tables.

But we have agreed to design a brand new 45 watt energy saving version. And, again, that's part of the ACEEE/NEMA agreement.

So, we're on the assumption that we are in agreement also with California.

The only other issue I simply respectfully ask that you take another look at the implementation or effective date. The other states that are doing this now, the new language, are adopting 1/1/08. I do understand your rationale for the June or July 2007 because California has a manufacture-by date, rather than a sell date. So we certainly understand that.

But the confusion in the market is amazing, trying to keep track of 50 states with all of these kinds of regulatory actions are something that we would seek consistency on an effective date of 1/1/08.

Steve, did you have -- does that

represent --

PRESIDING MEMBER PFANNENSTIEL: Since you speak with one voice, did she speak in your voice, or do you have your own voice?

MR. NADEL: No, I basically agree with what she said, specifically you need to add to the exemptions, and I'll give this to Gary, a statement that was in the NEMA comments for a less or equal to 45 watt for R20 as an exemption.

We have not taken a position on the effective date, whether it's July 1st or a six-month delay. We prefer the savings sooner; on the other hand, it's six months and it's not that big a deal.

If you do go with the July date, you will have to adjust the language in the upper paragraph, as well. So we'll leave that to you.

The only other thing I'd add, and I'm going to switch hats now from an ACEEE hat to a PG&E hat, because I'm also working with PG&E. They did ask me to point out while they have now understood this proposal and agree with many of the exemptions, they do note that for the less than 45 watt products that is mostly an energy conservation savings, not an efficiency saving.

There are more efficient products that will meet the standards. You can get efficiency. But the low cost way to meet it will be a slightly reduced light output product, not a more efficient product.

And so they wanted me to note that. And I don't know if you want to add anything, Gary.

MR. FERNSTROM: So PG&E doesn't support the 45 watt compromise because that's a dimmer bulb at lower power, and it doesn't meet our charter for endorsing enhanced energy efficiency.

PRESIDING MEMBER PFANNENSTIEL: Thanks. I would like to say that I'm really appreciative of the work that NEMA and ACEEE did on this. This, I know, is a really difficult issue. And from, you know, being able to kind of watch the progress, I know it took a lot of give on both sides.

I think the result speaks well for both parties' willingness to move into the area of energy efficiency by making some tough choices. So I think that it serves the State of California well, and hopefully the U.S. energy efficiency cause, as well. So, thank you.

Are there other comments, then, on the

incandescent reflector lamps? Is there any other discussion? And, Gary, do you know of any other discussion -- either Gary -- on this area? Okay, thanks.

Okay, then we move into the question of the metal halide luminaires. And I have to say, we have a large number of blue cards, people who would like to speak to this subject.

So, I'd like to start then with Joe Howley. And then we'll work through the other blue cards.

MR. HOWLEY: My comments on this are going to be relatively straightforward. And it only has to do with the availability of pulse-start lamps. There is a tier one regulation that would regulate -- or that has already regulated vertical burning pulse-start lamps.

The question is horizontal burning pulse-start lamps, there's a proposal to regulate them in 2008. And based on a survey of NEMA lamp manufacturers, the higher wattage pulse-start lamps will not be commonly available until sometime during 2008 from at least three major manufacturers.

And that's how we define commonly

available, that at least three major companies are making them, so fixture manufacturers have some choice, users have some choice in terms of products.

And so our simple request here is that rather than having all the horizontal burning pulse-start lamps go into effect January 1, 2008, that the higher wattage lamps, those between 200 and 500 watts, that regulation for horizontal burning go into effect January 1, 2009.

This is again, it's a low volume area. But simply to avoid market disruption and to assure product availability, we would suggest that as a better implementation date. And you'll see that in NEMA comments, as well.

Any questions?

MR. FERNSTROM: Gary Fernstrom, PG&E. Joe, you characterized this as a low volume product.

MR. HOWLEY: The horizontal burning lamps.

MR. FERNSTROM: Are the horizontal burn metal halide not commonly used for billboards that we see all over the state?

MR. HOWLEY: I believe that's one

application for horizontal burning.

MR. FERNSTROM: So it may not be a large part of the market in general, but billboards are huge. And PG&E has identified these as a fertile area for energy efficiency improvement opportunity. And the pulse-start lamp and ballast is one of the major ways of realizing that opportunity.

MR. HOWLEY: Right. We're not opposed, in theory, to the regulation. It's simply a matter of those products have not been developed fully simply because we were using our technical resources on developing the vertical burning products, which is the high volume products.

And it is just that these products won't be available for about two more years, widely available. But we're not opposed, in general, to that regulation. So, that's the main point.

PRESIDING MEMBER PFANNENSTIEL: Tim.

MR. TUTT: Yes, Joe. You're suggesting that these bulbs will be available sometime in 2008 from at least three major manufacturers?

MR. HOWLEY: Um-hum.

MR. TUTT: And I think you're aware that he Commission's regulations apply to the date of

manufacture of the bulb, so in 2008, early 2008 it would still be reasonable or legal to sell bulbs that didn't meet the standards, is that --

MR. HOWLEY: I suppose that would be one approach that we may use if we were forced to use that approach. It's just stockpile a few bulbs for that year. Not the ideal --

MR. TUTT: This is two years from now. Is there any play in the manufacturers' schedule for these bulbs in a period of two years? Could it be a few months earlier or a few months later, depending on the circumstances, that these become available?

MR. HOWLEY: I don't have that specific knowledge. We didn't ask for a specific month when these products would be available in 2008.

The survey question was in what year will these products be brought into the market. And as we looked, as different companies responded, it wasn't until the year 2008 that at least three companies had checkmarked that the products would be brought, high wattage, horizontal burning lamps would be brought onto the market.

Because this is a product that's

relatively new. It's just now being developed. And that's why there's not a lot of manufacturers with it. But we're all working on it and we all plan to have it. It's just simply 2008.

Therefore, if you pick January 1, 2009, we're assuring you that we'll have at least three major manufacturers selling the product.

As you bring it back even months or the whole year, anywhere in the year, you're just less and less assured. There'll probably be a product or two out there. There will just be limited market availability.

And so this is simply a market disruption request. We will get into a very detailed technical request very soon here.

MR. TUTT: Okay, one last question. It's my understanding, and it's been awhile since I've looked at it, so I may be mis-remembering, but there's several other states that have similar standards to the ones proposed here, that do go into effect on January 1, 2008, is that correct?

MR. HOWLEY: I believe there's a few other smaller states than California that go into effect at that point. Obviously to the extent more states come into effect, it creates more

market disruption problems and availability problems.

Certainly bringing on a very large state like California is going to create some -- we anticipate it might create some market disruption problems.

On the other states, with much smaller sales volumes, you may be able to handle it similar in the fashion that you're describing in terms of building inventory to handle that year. When you get to very large states like California, it's much more difficult to do that. Again, why we are suggesting January 1, 2009.

MR. TUTT: Okay.

MR. HOWLEY: All right. Thanks.

PRESIDING MEMBER PFANNENSTIEL: Yes, Kyle.

MR. PITSOR: This is Kyle Pitsor; just wanted to follow up on Tim's question. The date of manufacture requirement is on the luminaire manufacturer in the regulation, not on the lamp manufacturer. So there's an issue there.

And in the states, Massachusetts' effective date is 2009.

PRESIDING MEMBER PFANNENSTIEL: Robert

Erhardt.

MR. ERHARDT: Thank you. I've presented before to the Commission, I thank you for allowing us to present again. I have already given comments on what Advance sees as a basic issue with the luminaire standard that's being proposed, and that is that by specifying ballast efficiency alone, the Commission will be seeing very limited energy efficiency, and with great disruption to the marketplace.

The electronic ballast at this time, which the current proposals are based on, represent less than 1 percent of the market, and about .1 percent of the installed base, representing a very limited range of experience in the field for this type of product.

As a matter of fact, many of the experiences of this type of product are less than positive. I've heard from some luminaire manufacturers that the failure rate for electronic ballast systems may be ten times that of the failure rate for electromagnetic ballasts.

In the PG&E proposal that justifies this legislation there are some numbers that assume 40 watts per luminaire of energy savings -- 44 watts

per luminaire of energy savings. However their energy savings is based not on ballast efficiency, which is what is before the Commission today. It is system efficacy. And 30 of those 44 watts come from a change in lamp power from 350 watts to 320 watts.

That means that the ballast efficiency, which is what the Commission is looking to legislate, represents less than one-third of the energy savings proposed by PG&E.

Advance does not argue that there is considerable energy that can be saved by writing legislation for system efficacy; and a ballast can be a contributing factor to system efficacy.

As a matter of fact, I think it's our own company's website that is being quoted in a lot of this analysis. We do market a product that does improve the mean lumens -- lumen maintenance for lamps and the mean lumens for system efficacy. However, not all electronic ballasts do this. And ballast efficiency does not directly lead to an improvement in system efficacy.

As a matter of fact, some electronic ballasts, according to our sister company, Philips Lamps, actually have lower mean lumens than

electromagnetic solutions.

There are also some assumptions on the cost to the consumer. In the PG&E report there's an assumption that an electronic ballast represents an incremental cost of $30 per luminaire. Advance estimates more like $100 per luminaire incremental cost for an electronic versus an electromagnetic ballast.

I did try to do some searching on the internet to see if there were any published reports, and the only published report I did find was from a LCA study that estimates a $173 incremental cost in going from electromagnetic to electronic ballast.

This would change the cost/benefit analysis from PG&E, where PG&E projects an incremental savings to the consumer of $198 in net present value. If one takes the $100 assumption for incremental cost with one-third of the energy efficiency directly attributed to the ballast, one finds a net cost to the consumer of $37 in net present value for an annual savings of about 70 kilowatt hours.

As I presented previously, HID systems are probably the most sophisticated, I'll say,

from a technological standpoint, lighting systems in the industry. You're dealing with a lamp that gets its light from a mixture of gases that have chemical reactions taking place. These chemical reactions are taking place with the containment vessel, whether it's the quartz or the ceramic. This is changing the properties and the geometry of the containment vessel. And it changes the parameters of the lamp over its lifetime.

This makes it very difficult to approve any given lamp and ballast system for compatibility in the marketplace. And it is the main reason why ANSI has been having such difficulty developing standards for this type of system for electronic ballasts.

It is known that the high efficiency electronic ballasts which the existing standard is based on at the higher power levels is not compatible with a whole class of lamps; at least as far as our company knows. Philips ceramic metal halide lamps, which represent the state of the art in metal halide lamp technology are not compatible. And it is not possible to make a high efficiency electronic ballast compatible with them, with high frequency electronic ballasts.

Ceramic metal halide represents the current state of the art and the direction that industry is taking with the next generation of lighting technology.

I have presented, and available here, are a couple of papers, both my analysis and a presentation that Philips has made to the Department of Energy recently, showing advances that Philips is taking in the area of metal halide technology.

When you limit the type of product, type of ballast that you can use, you limit the number of options you have in developing future systems. For my analysis, on average at the higher power, ceramic metal halide have high efficacy.

As a matter of fact a 400 watt ceramic metal halide lamp, on average, operating on an electromagnetic ballast has higher system efficacy than a quartz metal halide lamp on an electromagnetic ballast -- I'm sorry, on a high frequency electronic ballast.

So, specifying ballast efficiency, while electronic ballasts represent one means of achieving higher system efficacy limits and eliminates other means of achieving the same or

even greater system efficacy.

As I say, the industry, I'm part of ANSI. I'm, as a matter of fact, the Technical Coordinator for the high frequency electronic ballast task group. We are just starting our development of the high frequency electronic ballast standards. And the lamp companies have yet to begin their standards on the lamp requirements for high frequency electronic ballasts.

So even quartz metal halide must be approved system by system. That means each ballast has to be tested with each lamp for a period of thousands of hours before a lamp manufacturer will agree for its operation on a given ballast.

Compare this with the standard ANSI process, electromagnetic ballast standards exist today. And any of the lamps you can find on the market, when paired with the proper ANSI code electromagnetic ballast will be backed up by the manufacturer of the lamp.

So, high efficacy systems that are based on electromagnetic ballasts offer little, if any, risk to the consumer using the proven technology

of electromagnetic ballasts.

Also, as I've indicated, an electromagnetic ballast has arguably four parts. It has a coil, it has a capacitor, and the ignitor might be another five or six parts. Compare this with an electronic ballast. An electronic ballast has -- our electronic ballasts, for instance, have 260 or more parts. We have some electronic ballasts with over 300 components in them.

If one assumes the same type of reliability per component, of course we have to be sure that electronic ballast components have much higher reliability to have any kind of meaningful reliability, the reliability of a 60 hertz system has the potential to be an order of magnitude better than the reliability of a electronic system.

As I mentioned, there's no standards. Verification. In the PG&E report they are calling out an ANSI standard for method of measurement and verifying ballast efficiency. First of all, the version of the report that they're citing is dated. It even allows analog meters with an arm with an accuracy of, well, some percent.

If you hooked up a 300 kilohertz output

ballast to one of these I'm not sure what you would have, but it certainly would not be an indication of power.

The ability to measure high frequency electronic ballasts is not well understood. Companies do it. Our company does it. You'll hear from other people how, yes, it can be done accurately. But the point is there is no standard for the California Energy Commission to point to for verification.

If the California Energy Commission wishes to specify efficiency based on high frequency electronic ballasts, it will have to specify a method of measurement, a means of verification, because there exists no industry standard for method of measurement for high frequency electronic ballasts.

And as we have just begun the ANSI standard for the high frequency electronic ballasts, the method of measurement has not even begun, and will not likely be available for some years.

As I indicate, Advance does take the position that there is significant system efficacy that can be -- efficacy gains that can result in

significant energy savings from HID systems.

However, the ballast efficiency only allows for very limited realization of these gains at significant cost. Electronic ballasts can represent a means to increased efficacy, but they do not guarantee increased efficacy, and they will significantly limit the available options in the marketplace for systems.

As I mentioned, can be accomplished through a lamp ballast efficacy specification. I had, in my previous detailed submittal, proposed a standard based on rated mean lumens and ballast input watts. In my opinion it is rated mean lumens which represents the measure that people will use in specifying systems.

They are going to be looking at comparable systems and they want to know comparable levels of light. And it will be the rated mean lumens of the lamp that will determine their design of their system.

As a mater of fact, the energy savings projected by PG&E relies on an improvement in rated and mean lumens. It doesn't say so here, but you do not go from a 350 watt lamp to a 320 watt lamp unless you have accomplished an

improvement in rated mean lumens.

I have proposed, although I'm having difficulty raising consensus, that's why this is an Advance position and not a NEMA position, that the Commission, if it wishes to accomplish the aggressive goals of energy savings that are laid out in the PG&E approach that it considers looking at system efficacy of lamp rated mean lumens, so that we avoid verification issues.

I understand that verification of mean rated lumens is a difficult undertaking. It takes years for a lamp manufacturer to do the testing in order for them to specify rated mean lumens. However, they do have industry-recognized methods of measurements for doing this. And they are doing this.

It would be possible for lamp manufacturers to -- and I may have some disagreement from my colleagues here, but arguably it is possible for lamp manufacturers to show test results that verify their rated mean lumens.

Ballast input watts are the most easiest of measurements. Almost any of the existing ANSI standards can measure ballast input watts. It's only when you have the complex output weight forms

from electronic ballasts that make it difficult to measure ballast efficiency.

So, if a ballast is producing the proper amount of light out of a lamp, and you can measure its input watts, and you have the rated mean lumens of the lamp, you have a very easy to verify method of specifying rated mean lumens per watt as a system efficacy proposal.

In the interim I recognize that Advance has been only participating in these activities for the last six months or so of the Commission's activities. We were not aware -- we had been aware that luminaire standards had been under discussion. Nobody bothered to tell us it was really a ballast standard. And I apologize for not being present and participating at an earlier point of time. I wish I was here a year or year and a half ago. I think maybe things could have been steered differently. But since I've been involved I've been very aggressively presenting information.

Advance proposes that if the Commission wishes to move forward with something at this time, to realize some energy savings, that they consider a ballast efficiency proposal that does

allow some of the proven systems to continue to exist in the market. Recognizing that writing a standard that only allows electronic ballasts eliminates 99 percent of the currently available market product in the marketplace.

I don't have yet consensus -- I apologize, again, developing consensus within NEMA is not something that happens in days; it happens over weeks. But based on my discussions from representatives from other ballast manufacturers, the red line is something that I think the ballast section and NEMA could have consensus on. It represents a curve of .00028x plus .75. I found a different slope better fit the ballast efficiency numbers for electromagnetic ballasts.

This chart represents -- and I can present, I realize I didn't present the more detailed data -- to come up with this chart I did two things. I took from a NEMA survey that was recently done on ballast efficiency, I took the minimum and maximum efficiencies at a given power, reported by all of the NEMA companies.

I added to that, I did a survey on the internet of ballast manufacturers. I believe the top five, at least five of the top ballast

manufacturers selling product in the United States. I looked at the minimum and the maximum ballast efficiencies for all five manufacturers at every power range for electromagnetic ballasts that are operable over multiple voltages.

So, I did not include the reactors, as they are 277 only. But this is high reactance, and CWA basically transformer coupled electromagnetic ballasts.

This curve representing something that Advance feels the Commission could implement directly in one or two years time, represents something that does eliminate some of the lower efficiency products from the marketplace. It will represent an improvement over the existing availability, but does allow other methods of accomplishing higher system efficacy with minimal impact, minimal disruption on the marketplace.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: John.

MR. WILSON: Mr. Erhardt, I don't know if you said what the black line was?

MR. ERHARDT: The black line is a more aggressive proposal. It was -- the black line represents, with a .765 Y intercept represents a

line that allows only the highest electromagnetic product at the 150 watt and 450 watt level. The red line takes the mid points of the efficiencies at the 150 and 450 watt level.

I think you can see that I had previously proposed a step response, and maybe this survey shows that you have relatively constant ballast efficiency from about 250 watts to 450 watts. And then it drops off. This is due largely to differences in lamp arc voltages. When lamps have lower arc voltages ballasts are less efficient.

So it's very difficult -- it's difficult to generate a straight line that will, you know, -- a straight line, let me rephrase that, a straight line will not eliminate half of the product, if you will, at any given power range. It would need a step response if you wanted to have, as I had proposed previously, if you wanted to, at each power range, effectively split the market, if you will, allowed in to -- products.

But if you want to allow products at the low end and the high end, the 150 watt and the 450 watt, then the upper line represents the maximum equation that allows at least some existing

product in the marketplace. And the red line represents allowing a mid-point, if you will, of the efficiencies at the 150- and 450 watt level.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. TUTT: Mr. Erhardt, I have a couple of questions.

MR. ERHARDT: Yes.

MR. TUTT: Are the examples of ballasts on your chart all electronic, are they partly magnetic?

MR. ERHARDT: These are all electromagnetic --

MR. TUTT: Electromagnetic.

MR. ERHARDT: -- with a transformer coupled to input so that -- these are electromagnetic ballasts that are available for the full line voltage range of the marketplace.

MR. TUTT: So those are not high frequency or low frequency --

MR. ERHARDT: No, there's no electronic in this graph.

MR. TUTT: Okay. How do the lines that you're proposing compare to the, I guess it would be the lamp ballast efficiency requirement that

you proposed in a written document?

MR. ERHARDT: The lamp ballast efficacy. Well, in principle, it depends on the lamp that you're coupling them with. In principle, with a highly efficacious lamp, yes. Any of, either of these two lines would be allowed with my other proposal.

As a matter of fact, you probably need the higher end of the ballast efficiencies with the higher end of the lamp efficacy in order to meet the previous proposal.

MR. TUTT: One last question. If there were some electronic ballasts that you would put on a chart like that, I guess what I'm getting to, my understanding is, like many things, it's easier to and more -- there's more product available at the lower wattage levels than at the higher wattage levels for electronic ballasts. They're more reliable and more tested in that level. Is that --

MR. ERHARDT: I think the market is more mature at the lower power range, yes.

MR. TUTT: Thank you.

MR. WILSON: Mr. Erhardt, I'm sorry I wasn't at the Committee workshop last October when

you presented. And I haven't seen your document, as well. But I wanted to ask in your presentation today you talked about reliability and industry experience. Is there objective data to go along with the description of industry experience is that electronic ballasts are not as reliable?

MR. ERHARDT: I think one of my colleagues representing the luminaire industry is going to be commenting on that. I can say from our confidential company proprietary experience that is, indeed, the case.

There was also a report, I don't think I have it documented -- actually I think Mr. Steve Johnson has some experience to relate, as well.

MR. WILSON: Okay.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. I'm sorry, Gary Flamm, did you have a question?

MR. FLAMM: Bob, you had talked about ballast lamp efficacy as a possible standard. And something I haven't heard discussed, it's my understanding that the industry is moving toward ballasts that operate multiple wattage lamps. And also the same ballasts can operate a quartz and a ceramic lamp. So I don't see how that would be

practical. So that's part one.

Part two is when you have a ballast that operates a range of lamps --

MR. ERHARDT: May I answer the first question first, or -- I'm sorry, go ahead.

MR. FLAMM: Sure; you might answer them both at the same time. When you have a ballast that operates a range of wattages does the efficiency of that ballast change along those range of wattages?

MR. ERHARDT: Depending on the design, the ballast efficiency can change. I think, again, we're talking about a luminaire standard, and when you have a luminaire standard you're specifying the -- UL requires you to specify a lamp. I don't think it's possible for someone to go in and just, you know, in changing the -- at least in our product, if you're using our Dynavision that operates 320, 350 and 400 watt lamps, you give the ballast a setting and it operates that lamp.

And a luminaire will be designed around that lamp power. The luminaire won't be rated for higher power lamps. Now, can it be done? Well, people stick higher than 60 watt rated bulbs in

their recessed luminaires, but they shouldn't. I mean it says right on the luminaire 60 watt maximum. And when you specify a luminaire you specify the rateage of the lamp that should be used with that luminaire.

So, I think as a luminaire standard you are specifying a lamp, even though the luminaire manufacturer has some flexibility in using one product for multiple number of their products. But each of their products will be specifying one lamp, or can be specifying one lamp.

MR. FLAMM: So it's your understanding that the luminaire manufacturers do not list for a range of lamps and wattages?

MR. ERHARDT: Well, I'll ask them to comment on that, but I do know that when we're dealing with UL and we're specifying product, we do specify what lamps the product can be designed for. And luminaire representatives can comment.

But, you certainly can, with UL, list products for only one wattage.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Mr. Erhardt. Let's continue then through the industry discussion. Dale Work from NEMA.

MR. WORK: The microphone's now on?

PRESIDING MEMBER PFANNENSTIEL: Yes.

MR. WORK: Well, thank you for giving me the time. My name is Dale Work; I'm from Philips Lighting, but I'm speaking on behalf of the lamp section of NEMA. So unless I make a specific comment later that identify, I'm speaking for NEMA and not for Philips.

And the point is a very important one that I speak to this morning. It has to do with this ballast efficiency curve for luminaires. And it might seem strange that a lamp section would speak to this standard, because this is a luminaire standard and the specific equation is a ballast equation.

But it has great repercussions for the lamps. And specifically it would not permit certain lamps to run on such systems. And we want to make that point very clear this morning.

As we understand the proposal only two ballast types can operate these medium wattage lamps. One of these ballast types is an electromagnetic ballast that is tried and true. It's very old and it has very poor power regulation.

We do not believe that the intent of

California is to move the market to this electromagnetic ballast. And if we are wrong here, please tell us, because all of my comments are on the assumption that the intent of the standard is to move to the electronic ballast, not this very old type with the poor regulation.

The second type of ballast that is permitted by the regulation is a high frequency electronic ballast. While this is not the only kind of electronic ballast in the market, it is the only kind permitted by this proposal. And I limit my comments to this type.

Today this ballast type, high frequency electronic, in this wattage range accounts for less than one-tenth of 1 percent of what's in the market.

More importantly, for the lamp industry, high frequency ballasts introduce a new failure mode into lamps. And that is these high frequency ballasts introduce high frequency sound waves into lamps. And these sound waves can lead to instability and can be destructive, in fact.

Sometimes these instabilities cannot be seen, when you see if a lamp and ballast go together, for the first hundred hours or the first

thousand hours or the first five-thousand hours. And the reason for that is that the lamp dimensions, believe it or not, change over time in very subtle ways that are very important to the stability on high frequency systems.

This is most pronounced in ceramic metal halide lamps. And by many accounts, ceramic metal halide lamps are the premiere lamps in the marketplace. They have an unusual combination of high efficiency and very high color rendering, making them suitable for a very broad spectrum of application.

And, Tim, I wanted to answer the question you had for Joe Howley earlier. Why don't we have people working on horizontal pulse-start lamps today. It's because most of our people work on ceramic metal halide lamps, seeing these as the lamp of the future.

I'm going to put on my Philips hat for one statement. Today no Philips ceramic metal halide lamps are warrantied to operate on high frequency electronic ballasts. None.

Speaking for NEMA, all of our lamps have people devoted to checking the compatibility of a high frequency ballast with our lamps anytime a

new vendor comes on the market with one. And we take a lot of time to do this. Most ballasts fail.

By far, the major point that we have to make today is that technical feasibility has not been shown for high frequency electronic ballasts.

Now, in the meeting notice that was sent out from the Commission, as I read it, technical feasibility is one of the legal requirements for establishing a regulation, an efficiency regulation. And we maintain that technical feasibility not only has not been shown, but it does not exist for the coming wave of high performance metal halide lamps.

There are many other issues and we spell these out in our detailed 12-point comments to you that we submitted in writing, but they're all secondary to this. That technical feasibility has not been shown, and California's own legal criteria for setting regulation is not met if it's limited to the high frequency electronic ballast.

Both ceramic lamps and high frequency electronic ballasts are in their infancy. Now, if it is as clear cut as I have described, how could this escape the recognition of the people who

wrote this draft standard? And I would like to submit to you maybe four reasons.

One is I can imagine that the people who drafted this regulation did not perform any of their tests with ceramic lamps. I think that's possible.

The second is even if they used ceramic lamps they might have performed this test using the normal electrical compatibility tests. But as I've pointed out, the new failure mode introduced here is not an electrical incompatibility, it's a mechanical incompatibility. The sound waves, the acoustic waves set up in these lamps can destroy them.

A third reason could be that people who proposed this regulation tested lamps new, or for 100 hours, or for only 1000 or 5000 hours. In which case they may have missed the essential failure mode.

And there's a fourth reason that Bob Erhardt mentioned earlier, but I think is very important. I think that it's reasonable to believe that if a person opens a ballast and this ballast says this will operate 400 watt metal halide lamps, a reasonable person might think that

it would operate all 400 watt metal halide lamps. In fact, that is not the case.

That is exactly the reason that we have ANSI standards. With ANSI standards, if you have a typical 400 watt metal halide lamp, the lamp will say on it N59. You find a ballast that says on it N59 and you have a compatible pair.

Today, and as Bob mentioned, for the foreseeable future, there is no ANSI standard for high frequency electronic ballast because the design rules for compatibility are not known well enough.

And so I would say that if the preparers of this proposal, which I believe to be PG&E, got confused, then surely the marketplace can be expected to be very confused about a ballast without a standard.

Now, the issue here is a ballast efficiency proposal, and as the NEMA lamp section, we do not have an alternative proposal to give. We are not in the ballast design business.

But we do have three suggestions going forward to prevent such incompatibility issues from sliding into regulation.

The first is we encourage the Commission

not to focus on technologies, but on energy savings or efficiencies. Now, I know from our recent phone call and from the workshop in October that you say that is exactly your intent, not to focus on technologies.

But when I look at the PG&E report on which this proposal is based, I find this sentence: Standards requiring electronic ballasts are cost effective and achievable, and are therefore recommended." We think that approach is a recipe for disaster. We should not start out with an assumed technology which has not been demonstrated, but we should focus on energy savings.

A second suggestion from the lamp section is that since 99.9-plus percent of the ballasts in the marketplace are electromagnetic, a much more reasonable place to begin would be to try to segment those into more and less efficient electromagnetic ballasts and save energy there.

We certainly understand the Commission's desire and the Commission's intent to save energy. But we think it is not an effort well placed to focus on high frequency electronic to do that when they represent such a small share.

And finally, with a view to a future regulation that someday will include electronic ballasts, we would encourage the Commission to use either the CLTC or the Lawrence Berkeley Lab that Steve Johnson here heads up; people with practical lamp ballast experience to craft a future regulation. These are people who are used to working with industry. These are people with whom we normally have conversations.

As an industry, and as a lamp section, we want to migrate to ceramic metal halide lamps, the high value product. And I'm sure the ballast section wants to migrate to electronic metal halide ballasts, because those are the high value product. But we want to do this in a way that preserves the high quality lighting that Californians deserve.

Thank you for your time.

PRESIDING MEMBER PFANNENSTIEL: Tim.

MR. TUTT: Dale, one question. Despite the statement that you found in the PG&E written case study, I don't find in the actual standards any words about requiring high frequency lamps or ballasts.

MR. WORK: Yes. And, Tim, I would only

say that you made that comment on the phone last week. I respect that. But our interpretation of that formula is that it only allows two types, high frequency electronic or what we call low quality magnetic.

If the intent is to drive the market to the low quality magnetic we just ask you to state that. Because then our argument would be framed entirely differently.

MR. TUTT: Okay, -- a microphone --

MR. ERHARDT: In working with Steve on negotiating levels, the current levels is basically a line that is drawn through the ballast efficient levels for the high frequency electronic ballasts.

PRESIDING MEMBER PFANNENSTIEL: Excuse me, if you're going to speak you need to --

MR. ERHARDT: I'm sorry, at the -- okay, at the higher power range.

MR. TUTT: So in the data that Steve received from the industry about covering, I thought, a range of ballasts from low frequency, high frequency to magnetic, and shown on the chart in the staff report, none of the points that are above the line that comply with the standard are

low frequency electronic ballasts?

MR. WORK: Steve is here, he can speak to it better than I. My understanding, and what I believe is in the market, is that at the 150 watt level those are low frequency electronic. Above that I think they're all high frequency. I think since that chart was put out there's been an introduction of one low frequency up there.

To my knowledge, none of the points on that chart were electromagnetic. But Steve can correct me on that.

MR. FERNSTROM: So, I have a question.

PRESIDING MEMBER PFANNENSTIEL: Excuse me, Gary, if you're going to speak you need to identify yourself for the record, please.

MR. FERNSTROM: Gary Fernstrom, PG&E. I have on my desk at the office what I think is a Philips self-ballasted electronic ceramic metal halide parlamp.

MR. WORK: Yes.

MR. FERNSTROM: Could you talk a little bit about that?

MR. WORK: Absolutely. That's exactly the point. That is not a high frequency electronic ballast. That is exactly the point.

We cannot drive that lamp with a high frequency electronic ballast. That's a low frequency electronic ballast.

And when you talk about a systems view, it's very important that that's integrated, because we can make sure that that ballast operates that lamp. That ballast does not have to operate the average of all such lamps in the marketplace; it's a one-to-one match. Thank you, Gary.

MR. TUTT: And, Dale, just for the record, what's the wattage level of that particular product?

MR. WORK: The one that Gary mentioned? It's 25 watt. That's the only watts that we offer. It's a --

MR. TUTT: So it's not covered by these standards then?

MR. WORK: No.

MR. TUTT: Okay.

PRESIDING MEMBER PFANNENSTIEL: Thanks.

MR. WORK: Thank you.

PRESIDING MEMBER PFANNENSTIEL: I think now we'll ask Stan Walerczyk from PG&E --

MR. WALERCZYK: Could I speak after

Steven, please?

PRESIDING MEMBER PFANNENSTIEL: After? Steve Nadel. I didn't know you were anticipating speaking on this. Go ahead.

MR. NADEL: Sorry, I filled out a card that listed two areas.

PRESIDING MEMBER PFANNENSTIEL: Okay, I missed this one. Go ahead.

MR. NADEL: Okay, can you hear me? Okay, let me find my presentation.

Okay, now I appreciate all this information and this discussion that we're getting. As we've noted before, we've been trying to work with the industry for more than two years. And each time we meet with them a few new issues come out, including some new ones today. It would be nice to finally get all the issues on the table.

(Pause.)

MR. NADEL: Okay, so I wanted to make a few comments responding to things. And particularly what I wanted to attempt to do, given all the information and cross-fire going on, is try to figure out where is there agreement on things. Because believe it or not, there is a lot

of agreement, I think. And limit it to where are the few areas where there's disagreement. And these are important areas of disagreement. But trying to wade through it so that you, as decisionmakers, can decide where you stand on those final key issues.

First, I wanted to briefly talk about the requirement for pulse metal halide lamps. That's only come up briefly here. But as you recall the CEC has already adopted a standard for pulse metal halide -- to require use of pulse start lamps in vertical application, either base up or base down. The base down with a later effective date.

The proposal now before you is to also require the same for horizontal and universal applications.

NEMA has pointed out that the definition of vertical may inadvertently capture the universal lamps, as well, because they do operate vertically. We agree with them and are fine with, you know, clarifying that we're talking vertical only, as opposed to lamps that will operate at any angle.

I'm surprised someone hasn't caught that

one earlier because that one has been out there for several years.

There's a brand new proposal which we had never seen before until this month about exempting universal position lamps. We don't think this is a good idea and particularly it would create a loophole so that you can now all of a sudden start using probe start lamps in any application. Because you can use a universal lamp in a vertical application; you can use it in a horizontal application. So we think they could be significantly widely used.

We note that there are already some 150 watt universal lamps on the market, and we think that manufacturers can, that's our understanding, develop the appropriate universal pulse start lamps, as well. These standards have been adopted in several other states, as people pointed out. Arizona, Oregon and Washington have these standards going into effect in 2008. Massachusetts in 2009. And, as people pointed out, several other northeast states are considering a standard in 2009. So we recommend keep universal lamps in there.

There has also been the proposal to

delay the effective date to 2009 for 201 to 500 watt lamps. The way it was worded in the NEMA language, I'm not sure this is what they meant, it implies that they may be wanting to do this for all of the lamps, including the vertical standards that have already been passed. Maybe that was a misunderstanding, but the language wasn't clear in the NEMA comments. So, hopefully, we're not talking about vertical. It sounds like, from the head shaking, we're not talking about vertical. Hey, language is not always clear. Good.

Still, we would recommend keeping the date at 2008, as I said, to align with the other states, particularly nearby states.

Also, if I recall correctly from previous meetings the NEMA survey asked people when they would have a full line of lamps. So while three manufacturers won't have full lines of lamps, my understanding is most manufacturers will have at least some lamps available as of the beginning of 2008. They may not have the full line; it'll take them a few months longer.

But particularly if California stands firm along with the other states, I think that manufacturers shall be able to accelerate those,

developing those final products.

One thing we are going to suggest, because I know the issue has been raised about, well, how do we get all these products tested. We are going to suggest that for the electronic type products, the ballast part of the standard, we delay that to 2009. The current proposal says 2008 for some products, 2009 for other products. By delaying that to 2009 that will allow the manufacturers to concentrate their testing on the pulse start lamps so they can really get all those cleared, and then move on to the next product. So that's a refinement there to try to address the various issues that have been raised.

Now let's proceed to the ballast efficiency proposal. The intent of this proposal was to require electronic ballasts or their equivalence, in terms of performance equivalence. And what we wanted, as Bob pointed out, we wanted the better lumen maintenance. That's a significant part of the savings, and we haven't tried to hide that, put all that in the case report, which allows lower wattage lamps, as well as a modest increase in the ballast efficiency.

The use of the ballast efficiency metric

was just a way to try to differentiate between the less efficient and more efficient lamps, to capture these wider benefits.

We were trying to, as Dale pointed out, have a performance based approach rather than a technology based approach. We agree, I think the CEC has a long history of trying to use performance approaches wherever possible. There have been exceptions. We'll be talking later about walk-in coolers. It's hard to come up with a performance approach, because you need a test lab. And a walk-in typically is a test center. So how do you test something that large.

But, anyway, there are exceptions. Most of the time we prefer performance based, and that's why we went with this approach.

It does allow reactor ballasts. We were not trying to include them; we were not trying to encourage them. But that's where the cards fell as we tried to accommodate, and I'll get to this in a minute, all the electronic ballasts that we could get data on. We allowed some reactor ballasts, as well.

I would also agree that the data on electronic ballasts has been of uneven quality.

Different manufacturers do it different ways. There are testing issues, as well.

Also there's some down sides with the performance approach at this time. This is taking data from Bob's report and just expressing it. That there are some savings from ballast efficiency in the proposal for 45-day language, but the majority of savings were from the better lumen maintenance which allows you to use a lower wattage lamp.

I would also agree with Bob that not all electronic ballasts have better lumen maintenance. I believe the majority of them do. It's been a major marketing hook for these ballasts, but certainly not all of them do.

Now, in the course of the discussions here, as well as the discussions held with a number of people in the industry, I've heard, I think, something like six different proposals of how do we proceed here.

We have the proposal and the 45-day language. That's an equation. There's a modified proposal that we developed in an attempt to try to work with Philips and Advance to address some of the newer products they're coming out with that

would allow lower efficiencies if you have particular energy-saving features. And I'll describe this in a minute.

Another option that people in the industry have suggested to me is why don't we just go outright and say, let's just require electronic ballasts. It's not the ideal long-term solution, but if there are problems with the testing now, problems, issues about do we allow the reactor ballasts or not, would this provide a cleaner break.

I also heard, I think it was some people on the staff, suggest a proposal where you take the 45-day language and exempt certain high efficacy products.

There's the proposal that Bob just presented to regulate ballast efficiency, but only eliminate the very worst of the magnetic ballasts. Allow most magnetic ballasts and certainly all the electronic ballasts.

And then there's the proposal that Bob advanced earlier but still trying to be refined, a lamp ballast system efficacy. So, lots of different approaches out there.

Let me now proceed to talk about what I

understand to be, I think, points of agreement, and then we can concentrate on points of disagreement.

I think we would all agree that there are savings available from use of more efficient lamps. There are savings available from use of more efficient ballasts, whether it's a more efficient magnetic ballast, or even more savings if you move to electronic.

And there are also savings that are available by thinking of the lamp and the ballast as a system. A classic case of that is the ballast -- how the ballast and lamp work together to have different values of maintained lumens, mean lumens, which effectively determines what wattage of lamp you can use. So all of them can be important. No one wants to concentrate on any one of them.

I think we agree that better lumen maintenance can be a source of significant savings, that we shouldn't ignore that.

We agree that some, but not all, electronic ballasts have improved lumen maintenance. Bob, in his written comments, talked about the wide range of efficacies available with

lamps. Some of that has been captured already with the California standard to require use of pulse start lamps. But additional efficacies are possible.

Okay. I have to look at your data. That seemed like an awful broad range.

UNIDENTIFIED SPEAKER: -- only pulse, it was only protected pulse start lamps.

MR. NADEL: Okay. So I think we would agree that the pulse start standard does achieve some significant lamp efficiencies, but more is available. That was my basic point.

We agree that ceramic metal halide lamps are generally more efficient than quartz. It's particularly significant at the lower wattages; at the upper wattages the products are just coming into the market. But they are showing some savings and I'm hearing a promise of much higher savings in the future.

Also, came out of some of the written comments. Dimming can result in energy savings. Also if you have a quick restrike, that can also result in energy savings. With the metal halide lamps, once you turn them off they typically require several minutes to go back on if you want

to switch them back on, which makes people reluctant to turn them off. If you have a quicker restrike, people will turn them off more, save energy. So quick restrike, all other things being equal, is good.

Bob's comments also talked about scotopic lumens. I think we'd agree that high scotopic lumens can be used to reduce light levels in appropriate applications. Still an issue about convincing a lot of lighting designers, but I think we would agree this is a promising area.

I would agree that there is presently no ANSI standard for electronic HID ballasts. I would also say, I think I've certainly had people in the industry tell me in private, that ANSI has been moving very slowly. That this has kind of been stuck for awhile.

I've heard from several people that the CEC proceeding has caused ANSI to accelerate its work. So, thank you to you guys, ANSI is moving now. So you played a very useful role even up to this point.

I think there's an ANSI standard for low frequency balance that is well along. I can't remember the exact schedule, but I think they're

trying to complete it next year, if I'm recalling. I'm doing this from memory. But it's well along and should be completed before any of the standards that we're talking about will take effect.

On the other hand, the ANSI work on the high frequency is just beginning. I believe I've heard about a kickoff meeting of that committee. That's going to happen in the next couple of months. It hadn't even been planned at all, but because of all the pressure from the CEC, I think they are getting that start.

I think we've heard from people that at some point in the future, and I'm not putting a date on this, electronic ballasts will predominate. They do have multiple advantages, and eventually this field will move that way.

So we're all trying to figure out how to do that as quickly as is reasonable. We don't want to do it at the expense of light quality, et cetera.

We've heard some statements about which lamps are certified, which are not. I think one manufacturer says they don't presently have any ceramic lamps certified with metal -- electronic

ballasts. Other manufacturers do have some products. So, there are some ceramic metal halide products certified with electronic ballasts.

But I agree, because there is no standard, if you will, it's on a individual basis. Lamp manufacturer X will certify for the following four products produced by ballast manufacturer Y.

The curve that ACEEE and PG&E developed that is the basis for the 45-day language, that was driven by the least efficient electronic ballasts that we can get data on. A lot of the data came from NEMA. There were -- we didn't look at it consciously for low frequency versus high frequency.

We were trying to get all the data points we can. There are, I know, low frequency data points in there. I haven't examined them in depth to see exactly which ones were high and low frequency. We're collecting all the data.

In particular, in the case of NEMA, they only provided us the data for the least efficient data points that they could provide. So, you know, we had assumed that at least some of those were low frequency. They're now telling us no, --

UNIDENTIFIED SPEAKER: Could I comment?

PRESIDING MEMBER PFANNENSTIEL: No, please. Why don't you wait until Steve is finished.

MR. NADEL: Okay. So, here -- Bob, you can sit, it'll be a few minutes. It'll be a few minutes.

So this is the chart here. Do we have the laser pencil? No. Use the -- thank you, aha.

What we did is we took the best-fit line including the NEMA data, since the last meeting. We added the NEMA data into our equations. This was data they provided us about a week after the last CEC workshop.

And we lowered the slope and intercept so we captured virtually all of the electronic ballasts that were on the market. Only two points missed of all the data points we could find and NEMA could find.

The fact that maybe this type of efficiency is not sustainable didn't affect the equation one iota. What's really driving this is the bottom of that curve.

Okay, so, those were a lot of points of agreement. I think there are three major points of disagreement. Which option to use; I mentioned

there are six of them. And I'll get to that in a minute. Thanks.

There's a question about how much do electronic ballasts cost, and therefore are they cost effective. And then there's the question of when should a standard take effect, if we were to have a standard. I know there's been a number of comments on this, as well. I'll discuss those in a minute.

There's also two other things I saw in some of the written comments. One was a request to exempt all outdoor fixtures. In our opinion this has been debated for more than a year, and that the exemptions in the 45-day language adequate address. In order to be exempted you need to be rated for a wet location and have a high temperature ballast. Most magnetic ballasts could be such high temperature. So it's not a very onerous requirement.

But we don't want people just saying, well, I have a high temperature -- it's outdoors, is exempted. You need to exempt those where it may get hot, or it's in the direct sun in the Central Valley. But for a number of outdoor applications you don't need to exempt them. So we

think what you've done is fine.

There's also a proposal in one of the written comments, gee, should we exempt all ceramic metal halide lamps. We don't think this is a good idea. Some of these lamps are very good and we think they're the future. We're also well aware that there could be some real crap, if you will.

Do a lot of work in China. I know people are working hard on those. There may be some decent products coming out of China, but I also expect some low quality ceramic metal halide, as well. So if there's any exemption for ceramic metal halide, it needs to be tied to an efficacy requirement as opposed to UG, just because it's ceramic it's exempt.

Now, let's go to the NEMA proposals, and then back to some of the main, how we resolve some of these main points of disagreement.

One of their proposals was to regulate mean lumens per watt using rated data. That was the proposal in Advance's written comments that they're still working on. But this only attempted to capture the roughly 3.5 percent savings. It didn't include the savings from improved lumen

maintenance.

And the savings, as we see it, is relatively modest. From best we can tell, looked to be roughly similar to the 3.5 percent savings just with the ballast efficiency, ignoring lumen maintenance.

But, if you have a high efficacy lamp and it gets then replaced with a lower efficacy lamp later, some of those savings disappear if people feel they have to supplement the light with some other light to make up for the lost lumens.

So, there may be some possibilities working in the future based on not just rated, but how you test a particular lamp and ballast together, because that system is important. But it's not something we're going to do quickly, you know, in the next month. This would be a long-term effort. And whether it's workable, I'm not sure.

There's also the suggestion that we set ballast efficiency requirements that just eliminates the worst magnetic ballasts. I have to study the numbers a little bit more, but a rough eyeballing indicates maybe you're talking 1 percent savings; we're talking pretty small

savings.

Before we've been talking more on the order of 10 percent savings, so this is really just minimal savings. And we don't think it's worth very much.

Now, I mentioned one possibility. I know I shared it with staff, with Gary Flamm. Was to take the equation and add some adjustment factors. Allow a lower efficiency. If you have linear dimming -- by linear dimming means that if you reduce it to 50 percent of light output, you only use maybe slightly more than 50 percent of the energy. Some ballasts when they dim they don't save as much.

Credit for quick restrike. And then credit for very high efficacy lamps packaged with the fixture.

Our estimate is this approach would save about 9 percent on average. The way it would be expressed would be you'd have an equation same as in the 45-day language, but at the end you add a minus an adjustment factor. And you would specify what the adjustment factors are, .01 for quick restrike; .02 for dimming; .04 for high efficacy lamps; .07 for all three. You could also do other

combinations.

But it's a way to lower the requirements where you have these other virtues. And as I understand, it would allow a lot of the low frequency ballasts now being developed because of these other virtues.

I could go into details if we want to get into it later, but maybe I won't. In terms of exactly how the numbers, what the definitions are, and where we came up with some of the numbers, you know, why .01, .02, et cetera. But for now maybe I think we'd be better off concentrating at the higher level and see if we need to get into the details later.

Another alternative, as I mentioned before, suggestion made by someone in the industry was to just require electronic ballasts. That's not a perfect long-term solution, but it may get us where we want to go in the shorter term.

That way all the low frequency ballasts could be produced, including ones designed for ceramic metal halide lamps. There would be more products eligible. We could use the forthcoming ANSI standard for low frequency while waiting for the high frequency standard.

We do get some efficiency improvements because these low frequency ballasts generally are more efficient than the magnetic ones. We also will generally capture some of the improvements in lumen maintenance that we don't get with the magnetic ballasts.

It works out. And this is first-cut approximation. This would also save around 9 percent. We save a little bit more by getting rid of some of the reactor ballasts, but we lost some savings because the electronic ballast wouldn't be quite as efficient. But overall, roughly a wash. Has the advantage of being quite simple.

The other significant issue was electronic ballast costs. Advance is correct that the typical or common incremental cost today is around $100. That's, you know, still several years before the standard would take effect.

We're aware of a number of places where in quantities you can get incremental cost at $50 for these ballasts today, indicating what they can be sold for as quantities increase.

Our view is at a minimum we're talking a cost of $50 -- or at a maximum incremental cost of $50 once the standard takes effect. Because we're

talking much higher quantities than are being sold today. And we still think that the $30 cost is a reasonable for future after this market has taken off.

But, the Advance analysis also didn't include the lumen maintenance savings. They only took roughly one-third of the savings. If they didn't decrease the savings, even at their $100 cost, the savings were 198, so there's a net savings of 98. We think the $100 is very unlikely to prevail when the standard takes effect.

Effective date. As I mentioned before, the current proposal is for 2008 for some products, 2009 for others. We're now recommending just do a straight 2009. Let the testing labs concentrate on the pulse start in 2008 and let's do all of the electronic ballasts in 2009. That also gives a little bit more time to develop the appropriate ANSI standards.

There's also the option to continue with the equations, but outright exempt the high efficacy lamps, quick restrike and dimming. Not quite as good in the savings. Our preliminary estimate is maybe 7 percent. Wouldn't reject it out of hand, but I'd say that's the number three

option, if you will.

So, bottomline. Our preferences, and this is speaking for PG&E, the electronic ballast requirement, because it is simple and it addresses most of the issues that the industry has raised, we think the 45-day language with the adjustment factors is also quite workable, although a little bit more complicated.

Our third choice would be the 45-day language with the three exemptions because it's lower savings.

In our view, the proposals that we've seen coming out of NEMA are still mostly allowing magnetic ballasts, and are just small, marginal savings. And probably not enough savings to merit serious consideration.

The other thing I would say, regardless of which of the three options I list here you deal with, we think it's important to keep the pressure up on ANSI and manufacturers because absent this pressure these standards and this development can drag on for years and years.

I've seen this happen, for example, with electronic ballasts for fluorescent lamps. We really need to keep the pressure up. And as a

result we can get sooner to where we're all trying to get to, which is a workable, energy-saving electronic ballast.

Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Steve. I know that there are a lot of people here who want to discuss and ask questions and comment on your proposals and your analysis underlying them.

So I think what I'm going to do is call for a lunch break now, and give people time to think about it and be very succinct and efficient in the afternoon discussion.

We'll come back in an hour and start back up just where we left off. So, we'll take a break; be back at 1:30.

(Whereupon, at 12:29 p.m., the hearing was adjourned, to reconvene at 1:30 p.m., this same day.)

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AFTERNOON SESSION

1:38 p.m.

PRESIDING MEMBER PFANNENSTIEL: When we broke for lunch Steve Nadel had just finished walking us through a discussion. And we had some people who would like to both comment on Steve's presentation, and I believe continue the discussion on metal halides.

So, why don't we first ask for people who have specific comments on Steve Nadel's talk to begin.

MR. ERHARDT: I just wanted to clarify a couple points that were brought up --

PRESIDING MEMBER PFANNENSTIEL: Excuse me. Please --

MR. ERHARDT: I'm sorry, I'm Bob Erhardt, Robert Erhardt --

PRESIDING MEMBER PFANNENSTIEL: -- for the record. Thank you.

MR. ERHARDT: --from Advance. I just wanted to clear up a couple points. Mr. Nadel referenced a couple of my comments, and a couple of my papers. I wanted to clarify a few things.

One was he commented that lamp data,

that some of the efficiency gains that I had proposed were already accomplished. That is not the case. All the lamp data I presented was for pulse start lamps. So all of those lamps that I presented in my data are available under the current rules.

Concerning the ANSI low frequency standards, yes, the ballast standard is moving along and will be probably completed this year. The lamp standard is lagging, though, and will not be available probably for another year or so.

High frequency ballast tests started, but the high frequency lamp standards have not, so that means that while we will have a standard for the ballast, specifying it's electrical requirements, et cetera, the compatibility with the lamp is a separate item that still has to be developed.

The other was there was a comment about ceramic lamps being available. We are the largest HID manufacturer in the United States. We market, we sell a product Dynavision, which is an electronic ballast running from 320 to 400 watts. It is not approved by any lamp manufacturer for ceramic metal halide lamps.

In the data set that I've seen that were the basis for these standards, there were no low frequency electronic ballasts in any of the data sets listed above 300 watts -- I think above 250 watts.

Again, all my data in my presentation for -- all my presentations for this hearing -- now, I presented something for the previous hearing and I did mix up a little bit of ballast efficiency for probe start in my earlier prior-to-the-October meeting. But all the presentations for this meeting only deals with pulse start. It only represents improvements from the -- improvements that are already realized from pulse start.

A comment that I have to make is we have one basic difference of opinion. I think we fully agree with Steve that increased lumen maintenance and improved mean lumens efficacy is the objective.

The big difference we have is we feel that there should be multiple technologies available to realize that aim. And everything we have seen from Steve has the assumption that you should accomplish these through electronic

ballasts. And we feel that electronic ballasts represent one means of accomplishing this goal, but is one of the higher cost and higher risk alternatives in achieving these goals.

The other was about my presentation, his claim that my presentation for mean lumens per watt only captures the 3.5 percent. That is not my intent, and it is not the case.

My whole objective in trying to specify mean lumens per watt is to capture exactly what it is that is being credited with the energy savings in their study.

It is the mean lumens per watt that determines what size lamp you're able to use to illuminate a given area. And my whole proposal is really to -- rather than indirectly accomplish it, by specifying ballast efficiency and requiring electronic ballasts, I am proposing that we specify exactly what it is we're trying to accomplish, which is mean lumens per watt.

His comment about changing lamps to a less efficacious type and requiring supplemental lighting, in my opinion, given the applications for these systems, these systems are for big box retail like Home Depot and Walmart, et cetera, and

for warehouse group. This is not something where you put a task lamp on your desk. This is not an office environment where if you lower the illumination somebody's going to turn on an incandescent lamp. This is industrial, commercial/industrial applications where it will not be practical to add supplemental lighting.

Comment on the -- I forgot what the reference was, but there was a reference of 1 percent as being paltry. And my comment is, given the costs and risks associated with electronic ballasts, the 3.5 percent that is being proposed is a paltry number, as well.

The comments on the $100. That $100 quote I gave, that is a high volume number for our preferred customers. This is not something you're going to be able to go to the end distributor and find $100.

The only published study I saw had $170 premium for an electronic ballast. If, indeed, Steve knows where to buy electronic ballasts at $50 premium, I wish he'd tell Acuity, our biggest customer, because recently we have -- we put on hold our production of our electronic ballast because of some field issues. And we shut our

customer down. They did not have an alternative.

So, if there's an alternative, especially one at a $50 premium I think Acuity might want to hire Steve to show them where to find it.

And finally, there was the comments about how industry was moving very slowly with fluorescent electronic. I'd like to point out that the industry was moving slowly with electronic. There was a very strong push to a fluorescent electronic. And it resulted in a big quality disaster for the whole industry.

There were tens of millions of dollars worth of warranty returns for several companies because of a rush to electronic fluorescent in trying to make that switch too quickly.

Those are my comments.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Steve --

MR. TUTT: Hey, Bob?

PRESIDING MEMBER PFANNENSTIEL: Oh, I'm sorry.

MR. TUTT: One question. The ceramic metal halide lamps, I presume that they work with the electromagnetic ballasts without a problem.

It's just the electronic ballasts that --

MR. ERHARDT: Yes, yes, that's right.

PRESIDING MEMBER PFANNENSTIEL: Steve, did you have a comment back?

MR. NADEL: Steve Nadel. I just had a clarifying question, just trying to understand. Bob, with your proposed lamp ballast system approach, were you then trying to set your values to get 11 percent savings relative to the baseline? Or was it more like --

MR. ERHARDT: Yes.

MR. NADEL: Okay. Didn't --

MR. ERHARDT: Actually probably higher because the 11 percent -- I took Steve's line and then I took the mean of the ballast of the lamp efficacies from that line, and I said only higher than the mean. So, only above average lamp efficacy with the very high ballast efficiency you specified was what I included in my proposal.

MR. NADEL: I will look at your numbers. It looked to me like you weren't capturing 11 percent, but much lower. But we can take care of this offline.

MR. ERHARDT: Okay.

PRESIDING MEMBER PFANNENSTIEL: Thanks.

Bill.

MR. PENNINGTON: I have a question.

PRESIDING MEMBER PFANNENSTIEL: Yes.

MR. PENNINGTON: My understanding was that --

PRESIDING MEMBER PFANNENSTIEL: Bill, would you put your name in the record, please?

MR. PENNINGTON: Excuse me. Bill Pennington with the California Energy Commission Staff.

My understanding, one of the major concerns that the industry was raising earlier on in your comments in particular, was a concern with the compatibility between high frequency ballasts and ceramic metal halide, in particular.

And I was wondering, you know, what would be the possibility of setting the standards on a low frequency ballast criteria instead of a high frequency ballast criteria? Particularly if ANSI has already adopted procedures for evaluating that, it's been through the ANSI process.

And, you know, what's the possibility of that? I asked Steve about that a little bit offline, and he told me that it was difficult to identify in the data set high frequency ballasts

versus low frequency ballasts. And so that data didn't exist from his vantage point.

MR. ERHARDT: Well, the NEMA data did specify low frequency or high frequency. It was available in the NEMA data. We had no NEMA data available for low frequency above the 250 watt level.

I want to point out that while there is -- I think you need to understand how ANSI standards work. There's two parts to the ANSI standard. One is the low frequency ballast standard, and that is going to be available.

But that defines things such as what its input harmonic content is; what kind of VMI requirements does it have; what kind of voltage range does it operate over; what kind of, you know, these are the types of things that are in the ballast standard.

And then for the lamp ballast system compatibility issues, it points to the applicable lamp standard.

So, even though there are ballast standards very nearing completion, there still do not exist lamp ballast compatibility standards available for those lamps.

Concerning availability of low frequency electronic ballast for the higher powers, I expect there will be availability. I think there maybe is one on the market. I don't know what the status of its production is. I don't know how ours is progressing, if we're going ahead with it or not. It's proprietary information.

But when we developed this data the point was what's available today. And the low frequency designs were only available up to a maximum of 200 watts is my recollection.

And so all the data sets that all these standards proposals have been based on above the 200 watt level are based on high frequency data. And we have a whole other discussion about accuracies and inefficiencies when we start talking about the products that don't exist yet.

MR. PENNINGTON: It strikes me that there might be fruitful ground here between the advocates and the manufacturers for trying to identify what would be the efficiency associated with a low frequency ballast, and considering that as a first standard. So, anyway, that's what I would offer.

MR. ERHARDT: Well, two things. When,

we did have a meeting with Steve and we tried to, you know, we went with this type of approach. And we had some breakdown in our discussions.

The other is industry questions why are we focusing only on the ballast, when there are other more cost effective means -- can be other more cost effective means of accomplishing the same goal.

A ceramic metal halide lamp running on an electromagnetic CWA ballast, or 400 watt ceramic metal halide lamp running on a 400 watt CWA ballast has higher system efficacy than many, maybe most, of the quartz metal halide lamps at 400 watts running on an electronic ballast.

Why are you eliminating a whole system category that can have higher efficacy and focus -- why are we drawing the conclusion, why are we starting with the conclusion that electronic ballasts are the answer when there are a number of technological solutions to reaching these goals. That's our basic question.

PRESIDING MEMBER PFANNENSTIEL: John.

MR. WILSON: I just had a simple question for Bob or maybe somebody else at the table. What is CWA?

MR. FERNSTROM: Constant wattage autotransformer. Gary Fernstrom, PG&E. I can't help but observe that these discussions we're having look to me very much a lot like the discussions we had with electronic ballasts for linear fluorescent lamps a decade, 15 years ago.

We're pretty much there now with electronic ballasts for linear fluorescent lamps. This discussion just seems very very similar to that.

PRESIDING MEMBER PFANNENSTIEL: Did you have another question, John?

MR. WILSON: Yeah, I have a few more clarifying questions. Going back to Steve, since we didn't get a chance to ask questions before lunch.

You mentioned testing as an issue in your slides. But I wasn't sure in what context, and I wasn't sure how it related to the issue that Dale Work raised about electronic testing versus mechanical testing. Was that what you were alluding to, or maybe you could also respond to the issue that Dale was raising.

MR. NADEL: I was generally -- Steve Nadel -- I was generally commenting that the

testing issues get complicated with electronic ballasts in terms of, you know, being able to test them; what the test procedures are; the fact that there's different data out there; and which data do you trust, et cetera.

In terms of the very specific question about compatibility, I would point to the fact that while no lamp manufacturer is certifying their lamps with advanced ballasts, some lamp manufacturers are certifying, warranty-ing their ceramic metal halide and other advanced products with other electronic ballasts.

The lamp manufacturers do do rigorous testing. I'm not saying -- we're doing the testing. They do the testing and then, you know, they warranty their lamps. So, it is possible to develop these ballasts and lamps so that they are compatible and the lamp manufacturers will warranty them.

Philips doesn't warranty their lamps with other people's ballasts, and nobody warranties their lamps with the Advance ballast. But that's an issue limited particularly to Philips, Advance. Other manufacturers seem to be dealing with this.

MR. WILSON: One other thing I'd like to see is, Steve, you had a graph with the data and the lines. And then Bob had a graph with data and lines. Can we somehow get those on the same plot so we can see how the lines compare?

MR. NADEL: We can -- actually I'll put mine up in a second.

(Pause.)

MR. NADEL: Can you hear me?

(Pause.)

MR. NADEL: Okay. If you look at this graph, we graph many of the -- sorry, facing the wrong way -- the blue dots are the electronic data that we collected; the brown data are electronic data points from NEMA.

These pink triangles are magnetic ballasts. Bob's graph only included magnetic, so we had a line going roughly from like 82 percent efficient here up to, I think it was 87 percent efficient up here. So his line was dramatically lower, capturing many of these points. He probably has some points that we didn't have and vice versa. But he was all down in this neighborhood.

MR. WILSON: Bob, is there a reason you

only looked at the magnetic?

MR. ERHARDT: I was told that the Commission was asking for a compromise solution that would remove lower efficiency electromagnetic ballasts while allowing some of that technology to be available. That's why I presented that graph.

PRESIDING MEMBER PFANNENSTIEL: Tim.

MR. TUTT: Steve, is there a reason why we're focused on ballast efficiency as opposed to the efficiency of the overall system?

MR. NADEL: Whenever we've been developing the standards which look at the lamps or the ballast, we try to carefully think about the impact on the overall system. We're not taking them in isolation, but thinking through the system applications of this. For example, the impact on lumen maintenance.

Our view is that the quality of the test data give a mean lumens for lamp ballast combinations, there just isn't enough data to do a good job of a lamp ballast system prior to this point. We're probably talking a several-year process to get the data collected, a lot of testing.

We thought about it early on and we just

thought it was going to be too challenging. I'm not saying it can't eventually be done, but, you know, our quick take is the quick and dirty using rated data just doesn't quite cut it. And it'll be a lot more work.

So we're looking for something that's workable today that will get significant savings while we try to move toward improved approaches that will get additional savings in the future.

PRESIDING MEMBER PFANNENSTIEL: Bob.

MR. ERHARDT: Bob Erhardt, Advance. Yeah, my comment is that that is exactly what they are quoting as the gain in energy savings that they're accomplishing.

And I question if you are going to quote that energy savings, if you feel confident enough in the claims of manufacturers to quote that as your justification for the rulemaking, why are you not also confident enough in that documentation to make that your objective.

PRESIDING MEMBER PFANNENSTIEL: Well, is, in fact, that the case, Steve?

MR. NADEL: We can get some data that comes from, you know, rigorous testing; and there's other data that's all over the map. And

to try to -- ultimately need to get a good database so you can decide where to draw the line. While we can come up with a few data points we think are quite solid, we're not sure, you know, there isn't that much data available; and then trying to sanity check it, particularly since there's a lot of history of ratings in this field being convenient fiction. And trying to get the correct data across large quantities of products, and therefore being able to draw a line as something that could be done in, you know, in a few weeks.

PRESIDING MEMBER PFANNENSTIEL: Okay, last point and then we're going to move on --

MR. ERHARDT: Okay.

PRESIDING MEMBER PFANNENSTIEL: -- to some other people who'd like to speak.

MR. ERHARDT: My only comment is if Mr. Nadel thinks those claims are fiction then why is he quoting them as the energy justification for this rulemaking.

MR. NADEL: Steve Nadel. You misunderstood me. I think there are some good quality data out there, and there are some data that's not so good quality. And it gets difficult

sometimes to separate the two, particularly if you're looking at large quantities of data and trying to decide where to draw a line.

PRESIDING MEMBER PFANNENSTIEL: We have a number of other people who would like to speak in this area, so we're going to move on.

Thomas Girdlestone.

MR. GIRDLESTONE: My name is Thomas Girdlestone, I'm President of Aurora Lighting. And actually, I'd ask my associate, Tom Rose, to sit, in the interests of time, to help answer questions so we can move this along today.

Actually I'm here to provide alternatives and solutions and hopefully opportunities. We're looking at proposed standards.

Aurora Lighting is a manufacturer of electronic ballasts. And we are a new company on the scene, but have been developing electronic ballasts over the last five years. And over the last year commercially manufacturing electronic ballasts into the marketplace very successfully.

And our ballasts, to date, for HID lighting, our initial product offering is at a 400 watt range; in the next 30 days, an offering

between 150 and 500 watt range. Right out of the box is getting between 24 and 33 percent energy savings. With energy management systems that would be incorporated with our ballasts, with full dimming capability, 65 to 70 percent dimming capability, we're seeing an additional 20 percent energy savings resulting in nearly 40 percent energy savings over an existing magnetic ballast.

Extremely encouraging. We have 1000 units in the field. We don't have one field failure to date, which we're very proud of. And admittedly so, there's a lot more time that has to be put on these ballasts. Time is the very crucial issue as we move forward.

We have the production capacity of over 30,000 ballasts per month on a single shift. So as volumes increase and the market does begin to open up and opportunity is created, we'll be in a position hopefully other manufacturers that we can work with, will be in a position to meet or exceed these standards.

And in addition to meeting many demand response needs, especially in the State of California, as we look forward. And as a real bottomline issue, myself, coming from the energy

field, a real advocate of energy conservation, these types of products are much needed in the marketplace.

In addition to clean air issues, you know, for every megawatt that we can hopefully take off the grid, it will have a significant improvement in quality of life for Californians and people around the country as we start taking these type of power demands off the grid and start recognizing these efficiencies.

The Aurora ballast has been UL approved for almost a year now. We also have UL approved incorporation with a specific lamp and lamp manufacturer. Just yesterday UL approved the Aurora ballast as a direct replacement in a retrofit with a magnetic ballast. And the ballast fits all existing fixtures in the marketplace, or I'll say 90 to 95 percent. Of course, there are some anomalies out there.

Which is, you know, a very important factor for retrofitting. And, of course, when incorporated with a new fixture, the manufacturing process is a lot more straightforward.

And as relates to cost, the cost issue, yes, there is approximately a $100 premium today.

But when you start talking, when you talk about selling hundreds or thousands of these ballasts today, yes, they are more expensive. And we look very much forward to getting into higher volumes that will greatly reduce cost.

Working with people in the industry to be much more efficient in the manufacturing process. And, of course, it's volume, volume, volume at the end of the day.

Our expanded, as I mentioned a minute ago, our expanded line of products will be UL approved within 30 to 60 days. And when I start looking at the, you know, the standards in California to the standards in other parts of the country is that, you know, I believe we need to start looking at what I call, you know, policy or regulatory bias in the sense that in the implementation of new standards, and yes, California's looking at an aggressive standard approach, we need to look at whether the standards are implemented in 2008 or they're implemented in 2009.

If at such time when those standards need to be enforced and the products do not demonstrate either the marketed or the

capabilities as defined in the policy, there should be a rollback bias in that regulation or that policy, giving a relief to manufacturers such as us and anyone else that may enter that marketplace.

And I would recommend that there is some type of bias built into that regulation. Incentives to improve and create these energy efficiency products. But also, you know, give us a little bit of relief as it relates to a regulatory bias.

With that I'll take any questions.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. I have a couple. One, would you talk a little bit about this concept of a regulatory bias, how you're thinking about that?

MR. GIRDLESTONE: Well, I think it comes down to the fact that, you know, all this, regardless of what industry you're in, and we don't like a lot of government regulation, but when regulations must be imposed, especially in California, regulations which do support energy conservation which is a big issue, not only in California, but in New York and other parts of the country, that if there's a, you know, give the

manufacturers a race and set a finish line.

I think that is appropriate. That's what, you know, that's what America's all about, and let's see who can commercially meet these standards.

But, you know, in the interests of both government policy and the manufacturers, if there's a bias by a date certain, if a ballast does not meet certain criteria in terms of performance, talk about energy efficiency and it cannot meet certain performance in terms of durability and reliability, then I think the Commission should consider either further delaying or rolling back to the previous standard. Which actually has been demonstrated in some other industries, whether it be clean air issues and other regulatory type environments throughout the country.

PRESIDING MEMBER PFANNENSTIEL: Another question. Have you found any lamp compatibility issues with your ballasts?

MR. GIRDLESTONE: All the ballasts that we put in the field in both fixtures and lamps, we have not found any incompatibility; and our new family of products that will be out in the next 60

days will cover the full range of lamps, ceramic to quartz metal halide.

And probably, you know, a more significant factor, all this, we're having a lot of policy discussion, and I've been in this policy discussion before. At the end of the day the marketplace is going to recognize the energy savings of these new ballasts. And most likely are going to be purchasing these types of products before these new policies are effective.

And what we need to do, as industry, is to bring energy saving solutions to large power consumers, especially on the PG&E grid and some other grids throughout the country that have probably less than desirable utility rates.

I live in Knoxville, Tennessee, where, you know, we pay 3, 4 cents a kilowatt hour, so we won't be selling any ballasts in the Tennessee region anytime soon.

However, the marketplace will be the driver. And in the areas of the country that it is very expensive, your electric bills are very high, it's incumbent upon myself and others within Aurora Lighting, a fiduciary duty to their shareholders to sell that product and bring those

savings to the marketplace regardless of what the policy may be of any particular agency.

PRESIDING MEMBER PFANNENSTIEL: Thanks. Questions up here? Tim.

MR. TUTT: Yes. Are the ballasts in your line high frequency or low frequency electronic?

MR. GIRDLESTONE: High frequency ballasts.

MR. TUTT: And do they meet the proposed standard line that we see on the chart?

MR. GIRDLESTONE: We're well above the 95 percent line.

MR. TUTT: Thank you.

PRESIDING MEMBER PFANNENSTIEL: Bob.

MR. ERHARDT: Yes, I have a question. You mentioned lamp compatibility. I thought I heard you say you have UL given you lamp compatibility, was that right?

MR. GIRDLESTONE: No.

MR. ERHARDT: Okay.

MR. GIRDLESTONE: Our ballast is UL approved.

MR. ERHARDT: Okay.

MR. GIRDLESTONE: And we have also a --

we now have a certification with a specific fixture manufacturer and a specific lamp.

MR. ERHARDT: You have a lamp manufacturer of ceramic metal halide approving your ballast?

MR. GIRDLESTONE: No. That is with a quartz metal halide. Not with ceramic. Our next family of product, as I mentioned, will be approved with, let's call it the middle of the second quarter, we're aggressively pursuing both UL approval and certification with some specific fixture manufacturers to the specific lamp involved, yes.

MR. ERHARDT: Okay, so you have approval for you ballast with one lamp manufacturer with one of their lamps?

MR. GIRDLESTONE: That is correct. And as I mentioned, all these products are in their infancy, if you will. And I've come from industries where we've strived to meet certain standards for a commercial advantage, not necessarily to meet any policy standards.

So it's kind of reverse role in this case. And the real commercial opportunity here is, again, helping users, or the people who have

to write a check every day and have to meet payrolls or reduce their energy bill, and that's our objective. And that's what we want to bring to the marketplace, again.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. Any questions?

Now we have Stan Walerczyk.

MR. WALERCZYK: Yes, Stan Walerczyk with Lighting Wizards on behalf of PG&E.

I've been in this field now for a long time and I really do agree with some of the people that ceramic metal halide is really the future of metal halide. And I think that high frequency electronic ballasts are really the future of ballasts for metal halide.

Now, again, we're talking about not right now, but three years time. And I have no doubt that a lot more products are going to be available in three years. I know certain electronic ballasts now that are even certified with certain lamp manufacturers on their quarts and ceramic metal halide. And they even have letters saying that this lamp manufacturer will fully warranty their lamps with certain electronic ballasts.

Sometimes almost half the savings can be on the electronic ballasts, not just the lamp, but just the electronic ballast, versus 458 for a magnetic versus some electronic ballasts with a 400 watter is only 415 watts. So that can be almost half.

I've actually done some larger jobs where the adder for electronic ballast was only $50 to $75, and that was over a year ago.

What I think is very very important is that there are some electronic ballasts, high frequency electronic ballasts with certain ceramic metal halide lamps, like around 250 and 320 watt, that have higher efficacy than any T8 or T5 or any other HID system.

And without the electronic ballast you're not nearly as efficient with some of these systems. I mean it's amazing for high base that that's really the most efficacious system out there.

There's also been some notes about, well, electronic ballasts have all these components so there's more components to die. Not just the number of components doesn't really mean failure rate. Some of the electronic ballasts

actually have duplicates, so if one dies it'll still work. So there's more components, but that actually helps for reliability, does not hurt it.

And then the resonance issue, I mean that can be a problem with ceramic metal halide, but some of the high frequency electronic ballasts have been able to take care of that.

And the other thing, too, is with the increases in metal prices, magnetic pricing is going to go up for ballasts, and electronic ballasts are going to come down. And I think if we can just help move that along sooner, I think we're better off.

And one last thing is ceramic metal halide lamps have all these advantages. One negativity, it has a longer restrike time than quartz pulse start.

That'll do it. Any questions or comments?

PRESIDING MEMBER PFANNENSTIEL: No, thank you.

MR. WALERCZYK: Okay.

PRESIDING MEMBER PFANNENSTIEL: John.

MR. WILSON: I'm sorry. Stan or Gary, Steve Johnson was here this morning from LBL, but

he had to leave. But we talked to him for a couple minutes at lunch and he raised the general topic he was going to talk about, but he's not here, which was the role of utility incentives, and helping provide a market for these products.

And since you guys are with PG&E I wonder if you could talk about what utility programs are available for metal halide lamps.

MR. WALERCZYK: There are some -- you want to --

MR. FERNSTROM: You go ahead and talk about what we're presently doing, and I'll talk about what we're planning to do.

MR. WALERCZYK: Well, I just know that there have been certain rebates, like PG&E, there was a second-party program called NEO, New Efficiency Options. It paid $700 per kw saved. It goes until the end of March. And this really helped pay for some of these more expensive options, like suspended indirect fixtures, electronic ballasts for metal halide. And that was with PG&E and Energy Solutions worked on that together.

And there's already specific rebates prescriptive for metal halide. And then with

standard performance contract, which has a new name this year, there's a rebate of 5 cents per kWh saved over the first year. And the more wattage and kWh that you save, the higher incentive you get back. Gary.

MR. FERNSTROM: So, John, to answer your question. For the last decade or so our rebates have been principally based on pulse start instead of probe start metal halide lamps. And we're moving toward having the rebates associated with electronic ballasts to the extent that we see them available and working. And their availability is improving dramatically.

Steve Johnson also mentioned a low wattage ceramic metal halide lamps and the opportunity for electronic ballasts with those. And that's an area that we're looking at too, particularly in retail, as these low wattage parstyle ceramic metal halide lamps become available as an alternative to parlamps or halogen IR parlamps.

MR. WILSON: And, Gary, do you happen to know how the other utility programs match up? Are they comparable to PG&E's?

MR. FERNSTROM: Well, for the lighting

we're pretty much comparable statewide.

PRESIDING MEMBER PFANNENSTIEL: We also have Michael Minarczyk.

MR. MINARCZYK: Thank you very much. My name is Michael Minarczyk. I am with Holophane. Holophane is a fully owned subsidiary of Acuity Brands Lighting. Acuity Brands Lighting is one of the largest fixture luminaire manufacturers in the country. We're also a NEMA member, so I will present some of the comments in which NEMA is supporting with regard to -- ballasts.

In addition, I'd like to say, part of my career -- and by the way, I'm the Manager of Electronic Engineering at Holophane. Has been in the lamp design, ten years of my career has been in lamp design and metal halide ballast design. And also now I'm doing luminaires. So kind of been the whole breadth of the industry. So it's very interesting to see all the discussion and how the industry has grown.

My comments will basically be focused, change the order on the submitted written comments, so I'll talk a little bit about electronic ballasts so we can just keep that relevant to what we're talking about right now.

Holophane Company is one of the first manufacturers of luminaires to employ high wattage electronic ballasts in their fixtures. We have approximately tens of thousands of fixtures with electronic ballasts. And we've been producing them for well over three years, and we're kind of the industry leader in innovation for high performance reliability products.

And as we talked about reliability, one of our concerns that NEMA has had is relative to the reliability of a electronic ballast, per se, versus a magnetic ballast, from which a luminaire manufacturer's very very concerned about, because we're selling the end product. People don't buy lamps, they don't buy ballasts, they buy luminaires. And we get the first call when there's an issue.

So, and our experience has been currently the state of the art of electronic ballasts as we were saying and there were some numbers kicked around here, and basically they are some of our numbers. It's the order of 3 to 5 percent is what the accepted failure rate today is, based on this technology.

Obviously, we feel that isn't good

enough. It has to be within magnetic realms, which are about ten times or so better than that. They're less than 1 percent, over their lives. And there are a few components in those systems that are life-limiting, not only the quartz. So, you know, that's the goal.

So from our standpoint is that we feel that reliability should be a number one thing that this Commission and California should look at for not putting in systems that are less reliable.

With respect to the data analysis that was put forward by the CEC, I think a lot of that information came from either published data or internet information. We, again as a pioneer in using these types of luminaires, have tested a lot of these systems and some of them don't necessarily meet the requirements of what their own published specifications are.

So, one of the recommendations that NEMA has is that there would be an independent study taken on what is the actual reliabilities of these systems. And we are saying that there are most likely a number of agencies that do this, one of which we mentioned, the California Lighting Technologies could do this, along with partial

NEMA support in doing this.

The other thing that I'd like to talk a little bit about, and I appreciate each presentation because I think it answers a lot of, some of our concerns.

Specifically with respect to outdoor applications. The concern right now is the outdoor environment is a completely different environment than indoor. Again, you're dealing with the environment from the standpoint of lightning, from power surges and different levels than you do indoor.

Also, there's also -- it's a completely different, it's a thermal environment. Ballasts are basically rated differently than magnetic ballasts. And ballasts are basically rated from the standpoint of -- class and that is specified by UL categorization. Whereas electronic ballasts are judged by the ability to dissipate heat within their, to another structure, the housing.

That's why most ballasts right now are about the 75 degree C range. Although the environments in which they would have to operate within fixtures without significant improvements would be 90. So, again, addressing from the

standpoint of reliability, it's kind of in the wrong direction.

So, realistically I think we need to have that not part of the recommendations, to have an outdoor exemption.

For example, for timing for this regulation, as we go and develop new electronic systems, they have to be made compatible with the ballasts and the housings and all the other electrical components that work with it. There is considerable design time to do this. UL and other companies like UL, nationally approved laboratories for gaining such approvals, generally it's a very lengthy process.

Most of the luminaire manufacturers have this capability inhouse, so they do 99 percent of the work, okay. So, you know, they can do it very quickly, but it still takes a considerable amount of time. So our recommendation is, you know, 15 to 18 months for at least to get through that process, to get these products ready for use. And most likely it's about two to three years to get whole product lines. So, that is the other key point we'd like to make.

Getting back to the first item I have,

to get to non probe start metal halide luminaire requirements. There was a issue put forward regarding the definition of vertical versus horizontal.

When you put vertical only lamps, and basically pulse start technology was designed around vertical. The whole technology evolved around making a high efficacy lamp that provides you good lumen maintenance by removing elements probes from the arc tube. They're also designed in such a fashion that they're only intended to work vertical.

So when you put this in a luminaire that is intended to work more off-angle than 15 degrees, there would be an issue with that system. So, I think we feel with the restricted definition that needs to be much more clarified, specifically with respect to spotlight type lamps. So, again, as we recommend the 45-day language, that that be clarified.

And again, for the January 1, 2008 effective date, we also recommend that the CEC regulate horizontal and vertical lamps.

I do have some other comments to Steve, and they're just kind of my own personal. And

it's not from not necessarily a NEMA response, but my own. It's kind of good to see that we're kind of getting away from high frequency/low frequency discussions, okay.

I think, you know, who cares; the customer doesn't care whether it's running high frequency/low frequency. He wants something that works, okay. And I think the industry will develop the system to work, okay.

We currently have been kind of the high frequency guys for awhile. And our experience is there. Ceramic, again, offers new challenges. I think the lamp manufacturers are responding in various ways. Some are responding in maybe short-term plans, others may have longer term plans. But, doesn't matter; it doesn't -- you know, whether high frequency, low frequency, it's really, you know, getting the best overall system for the user.

And, again, all electronic is the way, I firmly believe that. I mean, you know, our company stance is that is the future.

I think we need some definitions of what you mean by quick and dimmable, quick, dimmable. There is a major difference between dimming a

quartz lamp and dimming a ceramic metal halide, for example, just by the nature of the construction of the lamp, they may have to be different, okay.

With respect to cost factors, again it's a wish list. I think we're a little bit ways from the $35 to $50. But I think, as volume goes, and drives, I think we may get there. But maybe not within the scope of the 2009 that you're talking about.

Basically that's my comments. The other thing is respect to testing luminaires and things, and we talk about doing independent testing, there, again, needs to be more clarification within the standards industry of what to test and how to test it.

I've also chaired C822, which is the ANSI electronic HID ballast committee, up until about a few months ago. And there is considerable progress on doing that, although there is, as Bob would mention, still quite a bit of work to do from the standpoint of getting all the parameters defined and getting them correctly aligned so we can compare one ballast to another ballast, or one lamp to another ballast and get that

compatibility.

So, that's all I have to say.

PRESIDING MEMBER PFANNENSTIEL: Thank you very much. Other questions? John.

MR. MINARCZYK: Thank you very much.

MR. WILSON: Excuse me, Michael. I do have one question and that is about the standard setting process. This has come up continually now for several hours about how important that is and how, from our perspective, how slowly it's going.

How do you get a more firm hand on what the timeframes are, and how do you light a fire under it?

MR. MINARCZYK: With respect to standards making?

MR. WILSON: Yeah.

MR. MINARCZYK: Again, the primary issue in the standards organization, and I'll speak just for ANSI, which I've been involved with for many years, is that it's consensus standards.

So, all the players in ANSI have to agree to a particular solution or specification. Which generally means that there's very very wide boundaries in which people will have to work in.

So, getting those boundaries defined,

okay, is really probably the toughest thing to do, because there is such a wide range of manufacturers' techniques in which they would manufacture a lamp where their idea is to do it, to operate on a particular system.

So, I think that the standardization process can't drive the technology. The technology kind of has to drive the standards. And realistically, electronic ballasts have been only used successfully for, you know, five years, say at the most.

So to try to standardize something on something that's only been around for five years, you don't quite know all the questions to ask and how to measure them. And as Bob mentioned, we have a low frequency electronic standard which is going through the final stages of approval, but it won't be able to be implemented because there are portions of that standard that were transferred to other measurement standards that needs to be developed.

So we're still talking about how do you measure things consistently. What type of equipment you use; what types of setups you use. So, yes, we answered all the questions of what we

need to know, and that's the main ballast standard. But how do you measure those things, that is the work still to be done.

So, you know, products that standards address have been available for, you know, five years, okay, low frequency, we're talking low wattage. But, yet, you know, there still isn't industry consensus on that.

And, again, it's a very difficult thing to do, to have all the major lamp manufacturers, ballasts, and lamp manufacturers and ballast manufacturers sit down at the same table and come to those things. Again, because of the risks of, you know, excluding somebody's product, you know, from the specification.

So I think as the industry matures, okay, and I think one of the key points that we said, electronic ballasts are in their infancy, as the industry matures those questions will become natural and those processes and procedures will become natural, okay.

Right now they're, you know, we do it this way, you do it that way, you know, how can we make it better.

So, you know, that's why, I believe, in

answer to your question, why it takes so long to do these kind of things.

And, you know, high frequency is just another one of those topics that really hasn't been addressed from the standpoint because there isn't a lot of folks using it. As Dale Work mentioned, you know, it's one-tenth of a percent are electronic ballasts that are out there efficiently using.

And, you know, our company has probably the most experience doing that kind of thing. But, again, we're just one company versus, you know, all the other, you know, millions of fixtures that are out there with conventional systems, so.

PRESIDING MEMBER PFANNENSTIEL: Tim, you had a question? No. Okay, thank you.

MR. MINARCZYK: Thank you.

PRESIDING MEMBER PFANNENSTIEL: Now, I don't have any other indications of people who further want to speak on this subject. So let me stop and see whether there are further comments on metal halides.

If not, -- yeah, sure, go ahead, Kyle.

MR. PITSOR: Kyle Pitsor with NEMA. I'm

not sure if this is the right time to raise this point, but in light of the discussions we've had on metal halide and the discussions we've had on the working, on the development we've had on the incandescent reflector, one of the suggestions NEMA would have would be the Commission to consider dividing the rulemaking and separating metal halide out to a separate activity so that we could move forward on the incandescent reflector and general service incandescent rulemaking, is where I think more progress has been made. And we just wanted to put that out on the record.

PRESIDING MEMBER PFANNENSTIEL: Thank you for the recommendation. Clearly what has to happen now is that my colleague on the Energy Efficiency Committee, Commissioner Rosenfeld, and I need to discuss what is -- we've heard today. Art will have access to the transcript and he, of course, will have access to Mr. Wilson, who can help make sure that he is up to speed on this.

And then we'll have to make a recommendation to the full Commission.

Are there questions on or discussions that we need to take on definitions related to lighting? This is an agenda item 5. I don't have

anybody who had raised the issues on a blue card. But if there is anybody, now is the opportunity to discuss that.

Absent that, we're going to move item 6 on the agenda, which has to do with other, the non-lighting appliances for which there are issues around the standards that have been noticed for discussion today.

I'm going to ask Michael Martin to introduce that subject to us.

MR. MARTIN: Thank you, Commissioner. As you can see from the agenda, there are four different subjects that came up as a result of six letters that we had received concerning standards that were adopted in December of 2004.

They all came from people who had not been involved in the rulemaking. They were addressed to various different people at the Commission, and they all asked for changes to the adopted regulations.

I think we've made very good progress on them. The first one regards hot food holding cabinets where it was pointed out to us that the definition that we use for hot food holding cabinets was broader than was intended by the

people who drafted it. And we have within the express terms some changed definitions that make it more precise.

To my knowledge there is no opposition to these changes, but you may have a blue card for somebody.

PRESIDING MEMBER PFANNENSTIEL: Not on that subject.

MR. MARTIN: Okay.

PRESIDING MEMBER PFANNENSTIEL: Although I will say that Ted Pope has asked to speak on this general subject, so after you've introduced we'll see what Ted has to offer on these appliances.

MR. MARTIN: Would this be the time to do it? Do you want to separate these four?

PRESIDING MEMBER PFANNENSTIEL: Ted, would you like to do that now? I don't know which of these specific items you intended to speak on.

MR. POPE: Ted Pope, Energy Solutions, on behalf of PG&E. I actually filled out a card so I had the opportunity to talk, and I felt I needed to. And so it doesn't seem like there's going to be much debate, so at this point I don't think I have a comment until --

PRESIDING MEMBER PFANNENSTIEL: That's fine, thanks. Go ahead, Michael.

MR. MARTIN: Okay, one down. Power plant supply -- excuse me, power supply accessories was a term that we used within the adopted regulations which we found difficulty in defining. And we removed that word, or were proposing to remove it.

To my knowledge there's no objection to that, but once again, maybe Ted has.

PRESIDING MEMBER PFANNENSTIEL: Apparently not.

MR. MARTIN: No.

PRESIDING MEMBER PFANNENSTIEL: Okay.

MR. MARTIN: Okay, that's two. The pools and spas is a subject where we received letters from both the national and the local industry. It has been an example of miscommunication in a big way. Through a result of a lot of conversation, it is now an example of some of the best cooperation that we have had.

And we have two meetings of technical people in this field who have meetings scheduled in the next month that Gary Fernstrom is planning to attend, and I'd like to attend one of them,

too. And we have no proposals for changes at this time, but I'm very pleased that Don Burns, who decided that things were going well enough he didn't have to come back after lunch, and things are going exceedingly well in that.

As I mentioned before, there were no changes in the express terms related to this one.

The fourth and last one is walk-in refrigerators and freezers where we do have a change that is proposed. We used a term of the envelope of walk-in refrigerator or freezer without defining it.

We have added a definition of walk-in -- of enveloped. And the definition indicates that we include the walls and the ceilings, but not the floors or the doors.

My feeling is that in a future rulemaking we need to handle the doors and the floors. But, this would be an editorial type of change. We failed to identify what we made by an important term that we used. And we may have some comments on this one.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Michael. Are there any comments? Is anyone here to speak on any of the changes to the express

terms that Michael raised? Chris Calwell.

MR. CALWELL: I am Chris Calwell from Ecos Consulting. I'm here on behalf of PG&E, and I didn't know we were talking about power supplies today, but I'll offer my shortest comment in the docket so far, which is the simple insertion of the word solely, regarding the power supply accessories question.

So this is page 134 of the document we were given with staff text. And right now the sentence reads: Power supplies that are made available by a product manufacturer as service parts or spare parts."

I was recommending the insertion of the word solely, because there are some parts that are still offered for service at the same time they're being sold new.

And that's it.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Chris.

MR. MARTIN: Where does this word go?

MR. CALWELL: The insertion of the word "solely" there and there.

MR. MARTIN: Solely as service parts?

MR. CALWELL: Yeah.

MR. MARTIN: I think that's even more editorial than the ones that we are proposing.

PRESIDING MEMBER PFANNENSTIEL: That sounds fairly editorial to me.

Any other comments? Anybody else have anything that they would like to put on the record at this hearing before we close it today?

There will be an opportunity for a hearing at the time that the full Commission considers adopting the amendments. And that will be March 1st currently anticipated.

Gary.

MR. FERNSTROM: Gary Fernstrom, PG&E. Before we close the door on the hearing, PG&E would like to go on record making sure to say that even though it's only a definitional issue, we would certainly like to see refrigerated -- what's the term, Ted?

MR. POPE: Walk-in.

MR. FERNSTROM: Walk-ins, doors, insulated and possibly floors, as well. Wouldn't want to be closing the door on the hearing without having an insulated door.

MR. MARTIN: I wuld agree with Gary that there is significant room for improvement in the

standard, in the upcoming rulemaking. Not only on doors and floors, but on some of the other items, also. Such as how you define R values and test methods and so on. We've had a number of comments, but none which require action in this particular rulemaking.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. FERNSTROM: Maybe one more quick comment. Pam Horner, this morning, emphasized the importance of a public educational campaign going along with the more efficient general service A lamp. And PG&E, in particular, and the utilities, in general, are investigating putting together that sort of program to run in the interim between when standards are adopted and they might become effective.

Savings associated with that can be claimed and credited as part of the utilities' goal, so we'd have every reason to support some sort of promotional program in the interim for the A lamp.

PRESIDING MEMBER PFANNENSTIEL: There was a comment out here; somebody wanted to speak.

MR. MINELLI: I'm Fred Minelli with

Kysor Panel Systems. And I wanted to just reiterate what Michael said, that we review R values and the methods we use to calculate R values, along with the doors and floors for walk-ins.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Good comment.

MR. MARTIN: Good.

PRESIDING MEMBER PFANNENSTIEL: We will make sure that we consider that.

Any other -- anything else to bring here? The notice does describe that there's an opportunity for written comments that will be considered for the March 1st hearing. Written comments are due February 22nd, so please take note of that.

Now, the notice further indicates that clearly that comments that come in right up until the time of the hearing on March 1st are, of course, entered into the record. I think that it's just clear that in order to be fully considered, they need to be available to the Commissioners prior to that.

Any other business to bring before the Committee at this time? Otherwise, we will be --

not quite adjourned. Ted, did you have something?

MR. POPE: Yeah, sorry. Ted Pope, Energy Solutions for PG&E. Just a quick clarification. I received an email that said that March 1st date was being rescheduled. Did I read that incorrectly? Was there a change?

PRESIDING MEMBER PFANNENSTIEL: Ted, you may well have heard that. I just simply haven't heard it, myself, yet.

MR. POPE: Oh, okay. Okay, thank you.

PRESIDING MEMBER PFANNENSTIEL: Bill, is that --

MR. PENNINGTON: We're anticipating that you may want to address some of these comments today in 15-day language, and that would need to be published after March 1st. And, so if that was the Committee's decision, we wouldn't be adopting on March 1st, we'd be adopting at that later date. And there wouldn't be a need for people to come to that hearing because it would just be an informational item for that business meeting.

PRESIDING MEMBER PFANNENSTIEL: And we'll let people know about that after Commissioner Rosenfeld and I have had an opportunity to make that decision, is that what

we're saying here?

MR. PENNINGTON: That's correct.

PRESIDING MEMBER PFANNENSTIEL: All right. Thank you for clarifying that. Thank you, Ted, for raising it.

Anything else?

We'll be adjourned.

(Whereupon, at 2:44 p.m., the Committee hearing was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Hearing; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said hearing, nor in any way interested in outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 24th day of February, 2006.